

Levin-Richmond Terminal Corporation

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September 30, 2019

Ms. Karen Jurist
United States Environmental Protection Agency Region 9
75 Hawthorne Street
San Francisco, California 94105
Via email: jurist.karen@epa.gov

RE:

2018-2019 Annual Report, United Heckathorn Superfund Site, Upland Capping System

Richmond, California

Dear Ms. Jurist:

Enclosed please find the 2018-2019 Annual Report for the Upland Capping System at the United Heckathorn Superfund Site.

Please feel free to contact me if you have any questions or concerns with the attached report.

Sincerely,

James Holland

Vice President of Facilities, Equipment, and Environmental Officer

Levin Richmond Terminal Corporation

(510) 307-4076

Enclosure: 2018-2019 Annual Report for United Heckathorn Superfund Site Upland Capping System



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2018-2019 Annual Report

United Heckathorn Superfund Site Upland Capping System Richmond, California

September 30, 2019 Rev. 0

prepared for:

Levin Richmond Terminal Corporation 402 Wright Avenue Richmond, California 94804

prepared by:

CDIM Engineering, Inc.45 Polk Street, 3rd Floor
San Francisco, California 94102



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2018-2019 Annual Report

United Heckathorn Superfund Site Upland Capping System Richmond, California

September 30, 2019 Rev. 0

prepared by:

CDIM Engineering, Inc. 45 Polk Street, 3rd Floor San Francisco, CA 94102

CDIM's work for the Levin Richmond Terminal Corporation was conducted under my supervision. To the best of my knowledge, the data contained herein are true and accurate, are based on what can be reasonably understood as a result of this project, and satisfy the scope of work prescribed by the client for this project. The data, findings, recommendations, specifications, or professional opinions were prepared solely for the use of the Levin Richmond Terminal Corporation in accordance with generally accepted processional engineering and geologic practice. We make no other warranty, either expressed or implied, and are not responsible for the interpretation by others of the contents herein.



Scott Bourne, PE #C72817

Principal Engineer

September 30, 2019

Date



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ACRONYMS AND ABBREVIATIONS

BMP best management practices

CDIM Engineering, Inc.

DDD dichlorodiphenyldichloroethane

DDE dichlorodiphenyldichloroethene

DDT dichlorodiphenyltrichloroethane

EPA United States Environmental Protection Agency

gpm gallons per minute

Heckathorn Site or Site United Heckathorn Superfund Site

IGP Storm Water Industrial General Permit

LRT Levin Richmond Terminal

LRTC Levin Richmond Terminal Corporation

MDL method detection limit

msl mean sea level

NAL numeric action level

NPDES National Pollutant Discharge Elimination System

O&G oil and grease

O&M operations and maintenance

O&M Plan Revised Draft Operations and Maintenance Plan, Upland Capping System,

Former United Heckathorn Site

pg/L picograms per liter

QSE Qualified Storm Event

ROD Record of Decision

SWPPP Storm Water Pollution Prevention Plan
SWRCB State Water Resource Control Board

Third Five-Year Review Report for United Heckathorn Superfund Site,

Richmond, California

TS-2 advanced storm water treatment system TS-2

TSS total suspended solids



1 INTRODUCTION

On behalf of the Levin Richmond Terminal Corporation (LRTC), CDIM Engineering, Inc. (CDIM) has prepared this 2018-2019 Annual Report to describe the inspection, monitoring, and maintenance performed on the upland cap at the United Heckathorn Superfund Site (Heckathorn Site).

1.1 Background

From 1947 through 1966, the Heckathorn Site was used for formulating, processing, packaging, and shipping pesticides including aldrin, dichlorodiphenyltrichloroethane (DDT), dieldrin, and endrin. These activities resulted in the release of pesticides to the surrounding soils and the Lauritzen Channel. In 1994, after remedial investigation and feasibility studies were completed, the United States Environmental Protection Agency (EPA) adopted a Record of Decision (ROD) for remedial action requiring:

- Dredging of all soft bay mud from the Lauritzen Channel and the Parr Canal, with offsite disposal of dredged material;
- · Placement of clean material after dredging;
- Construction of a cap at and around the former Heckathorn facility to prevent erosion;
- A deed restriction limiting the property at the former Heckathorn facility location to nonresidential uses; and,
- Marine monitoring to verify the effectiveness of the remedy (EPA, 1994b).

In 1996, LRTC entered a Consent Decree¹ with the EPA, which outlined LRTC's responsibility to design, construct, and maintain a concrete cap at and around the former Heckathorn facility to prevent erosion (United States District Court, 1996a). LRTC completed construction of the concrete cap in July 1999 (PES, 1999b).

Since the cap was constructed, EPA has completed four five-year reviews. EPA has found the upland remedial action is functioning as intended, is protective of human health and the environment, and has met the remedial action objective for the upland area by capping of contaminated soils, which has eliminated human exposure pathways and has prevented erosion (EPA, 2016a)².

Montrose Chemical Corporation of California, Chris-Craft Industrial, Rhone-Poulenc, Inc. and Stauffer Management Company (collectively the "Montrose Group") entered into a separate Consent Decree with EPA for dredging of young bay mud from the Lauritzen Channel and Parr Canal, with offsite disposal of dredged material and placement of clean fill after dredging (United States District Court, 1996b).

² Specifically, the 2016 Five Year Review states (page 34) "Another remedial action objective is to prevent the erosion and transport or upland soils into the Lauritzen Channel. Erosion is occurring only within the marine area – specifically, under the sheet pile along the Lauritzen Channel embankment; no erosion has been observed in the area of the upland cap. This RAO for the upland area has been met."



1.2 Program Objectives

To ensure long-term protection of human health and the environment, the remedial action goal established by the EPA for upland and embankment soils is the prevention of erosion and transport into the Lauritzen Channel (EPA, 1994a).

The upland cap was designed to prevent the release of residual chlorinated pesticides that are present in soils (PES, 1998).

The objective of the cap inspection and storm water monitoring programs is to identify any potential release of pesticide-impacted soil by examining the integrity of the cap system through visual inspection and storm water monitoring (EPA, 2011).

1.3 Operation and Maintenance Program

LRTC performs operations and maintenance (O&M) activities in accordance with the Revised Draft Operations and Maintenance Plan, Upland Capping System, Former United Heckathorn Site (O&M Plan; PES, 1999a). LRTC performs additional O&M activities as recommended by EPA in the Third Five-Year Review Report for United Heckathorn Superfund Site, Richmond, California (Third Five-Year Review; EPA, 2011) to provide added confidence that the upland area remedy maintains its effectiveness.

1.4 Contents of this Report

This Annual Report describes activities performed by LRTC to inspect, monitor and maintain the upland cap for the period of July 1, 2018 to June 30, 2019. Included is a summary of each of the following:

- Capping system maintenance activities;
- Storm water collection system inspection and cleaning;
- Storm water system monitoring;
- Storm water treatment;
- Annual cap inspection;
- Proposed site work for 2019-2020; and,
- A conclusion with CDIM's opinion as to the overall condition and effectiveness of the cap in meeting the program objectives.



2 SITE DESCRIPTION

The Levin Richmond Terminal (LRT) is located at 402 Wright Avenue in Richmond, California and is immediately adjacent to the Lauritzen Channel in the Richmond Harbor (Figure 1). The Heckathorn Site includes the northern five acres of the Main Terminal at LRT, also known as the upland cap area (Figure 2).

2.1 Upland Area Description and Current Use

The upland cap area is bounded by a railroad track and Cutting Boulevard to the north; South Fourth Street to the east; the LRT and Santa Fe Channel to the south; and, the Lauritzen Channel to the west. The majority of the upland cap area is relatively flat with surface elevations of approximately 9 feet above mean sea level (msl), with the exception of the upland cap area north of the Lauritzen Channel; this portion was raised to approximately 15 feet above msl during cap construction.

The upland cap area is used primarily for storage of dry bulk product and railroad operations. Photographs taken during the site inspection are included in Appendix A.

2.2 Nearby Water Bodies

The storm water system in the upland cap area discharges directly to the Lauritzen Channel (Figure 2). The Lauritzen Channel is connected to the San Francisco Bay via the Santa Fe Channel and Richmond Inner Harbor.

2.3 Upland Area Cap

Construction of the concrete cap at the upland cap area began in July 1998, and it was completed in July 1999 (PES, 1999b). Installation of the cap consisted of: (1) site grading to promote surface runoff to the collection points; (2) installation of a drainage system to collect surface runoff, including best management practices (BMPs) for storm water pollution prevention; and (3) construction of a reinforced concrete cap in the majority of the 5-acre area and construction of a geotextile fabric and gravel cap in the railroad track area (Figure 2). The concrete cap consists of a minimum 6-inch thick concrete with a double layer of welded wire fabric reinforcement. The gravel cover consists of a geotextile fabric over a prepared subgrade. The geotextile fabric is covered by a 6-inch layer of gravel.

2.4 Storm Water Collection and Advanced Treatment

The facility is paved with asphalt and concrete and is graded to direct surface water runoff via sheet flow or shallow swales to drop inlets (Figure 3). The drop inlets drain to five below-grade interceptors³ (SW-3 through SW-7) via underground pipe. The interceptors are equipped with compartments and steel baffles to allow the

³ The interceptor design was based on a five-minute retention time during a 10-year, 24-hour storm event (PES, 1999a).



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settling of sediments and separation of oil/grease and floatables. Each interceptor is also equipped with normallyclosed gate valves at the effluent pipe, which can be opened during heavy rains to enable direct discharge to the Lauritzen Channel.

In 2015, LRTC modified⁴ the upland cap area storm water collection system and installed an advanced storm water treatment system TS-2 (TS-2). Single-speed submersible pumps placed into the final chamber of each interceptor were connected to newly installed storm drain pipe along the edge of the LRTC pier. During storm events, the submersible pumps push storm water captured by interceptors SW-3 to SW-7 through an inline static mixer where a biopolymer flocculant is added. Storm water then flows into a series of two 21,000-gallon aboveground clarification tanks, where flocculant and solids separate from the water. Storm water overflows from the second clarifier and is pumped through four, 48-inch diameter sand filters. Effluent from the treatment system then is discharged to the Lauritzen Channel at the interceptor SW-5 outfall. TS-2 is equipped with a variable speed drive for pump control, a programmable logic controller, and a human machine interface.

The estimated flow for the SW-3 to SW-7 catchments that results from a 0.2 inch per hour design storm intensity⁵ is approximately 500 gallons per minute (gpm). TS-2 is designed to treat approximately 650 gpm. Additionally, due to the storage volume provided by interceptors and clarifiers, the system is able to capture and treat periods of storm water flow in excess of 650 gpm before treatment bypass occurs.

⁴ The storm water treatment system was described in the 2014-2015 annual report and a telephone conversation (December 26, 2014) and email correspondence (January 26, 2016) between Rachelle Thompson of EPA and Scott Bourne, formerly of Weiss Associates.

⁵ Design criteria for flow-based treatment established in IGP (SWRCB, 2014).



3 OPERATION AND MAINTENANCE

This section describes the operation and maintenance activities performed by LRTC for the upland cap at the Heckathorn Site during the 2018-2019 reporting year. These activities included:

- Upland cap maintenance;
- Storm water collection system inspection and cleaning;
- Storm water monitoring; and,
- Storm water treatment and operation.

3.1 Upland Cap Maintenance

During the 2018-2019 reporting year, LRTC monitored the performance of the concrete cap and gravel cover in accordance with recommendations contained in the 2017-2018 Annual Report (CDIM, 2018). LRTC regularly monitored the cap and inspected cracks, seals, and joints for signs of propagation and/or degradation. No evidence of exposed underlying soil was observed. Deteriorating concrete and minor surficial cracks were addressed as described in Section 4.1 below. The upland cap functioned as designed, and no major maintenance or repair of the cap was conducted during the current reporting period.

LRTC repaired deteriorating concrete at the railroad track east of interceptor #5, which was identified for monitoring and potential repair in the 2017-2018 Annual Report (CDIM, 2018) (Appendix A; Photos 1a and 1b). LRTC also repaired deteriorating concrete along the southern border of the cap, west of SW-3 (Appendix A; Photos 2a and 2b). Repair work was performed during dry weather conditions and did not disturb underlying soil.

3.2 Storm Water Collection System Inspection and Cleaning

LRTC inspected the storm drain inlets, interceptors and clarifier tanks prior to the rainy season and monthly throughout the reporting year per its Storm Water Pollution Prevention Plan (SWPPP; CDIM, 2018). Storm water interceptors and the clarifier tanks were cleaned before the start of the rainy season. Drain inlets and inlet filters were cleaned and replaced as-needed throughout the year. Accumulated material that was removed from the inlets, interceptors and clarifier tanks appeared to be bulk product, which LRTC returned to the bulk product piles.

3.3 Storm Water Monitoring

The objective of the storm water monitoring program is to verify the cap is effectively preventing erosion, reducing the potential for storm water contact with soils containing residual pesticides and reducing the potential for release of residual pesticides to the Lauritzen Channel. This section describes the storm water sampling, results, and quality assurance/quality control procedures. It also includes an assessment of the results.



3.3.1 Storm Water Sampling

LRTC sampled industrial storm water discharges in accordance with State Water Resources Control Board (SWRCB) Water Quality Order No. 2014-0057-DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000001, *General Permit for Storm Water Discharges Associated with Industrial Activities* (IGP; SWRCB, 2014); the O&M Plan (PES, 1999a) and a Consent Decree between the San Francisco Baykeeper and the Levin Richmond Terminal Corporation (United States District Court, 2014).⁶ Storm water monitoring requirements are documented in LRTC's SWPPP.

Prior to 2015, LRTC collected samples from interceptors SW-3 through SW-7. Since installing advanced treatment system TS-2, LRTC no longer regularly discharges storm water at these locations. As a result, LRTC now collects storm water samples from the TS-2 influent and effluent.⁷ In the event that elevated pesticides are detected in the TS-2 influent or effluent, LRTC is prepared to sample at interceptors SW-3 through SW-7.

Storm water samples were submitted to Vista Analytical in El Dorado Hills, California for pesticide analysis by EPA Method 1699. Storm water samples were submitted to Pace Analytical National Laboratories in Mount Juliet, Tennessee for the following analyses: pH by Standard Method 4500HB, total suspended solids (TSS) by Standard Method 2540D, oil and grease (O&G) by EPA 1644A, and metals by EPA Method 200.8. Original laboratory reports, including applicable chain-of-custody forms, are included in Appendix B.8

3.3.2 Sample Results

During the 2018-2019 reporting year, storm water from the combined TS-2 influent and effluent was sampled during four storm events: November 27, 2018; December 5, 2018; January 11, 2019; and, January 31, 2019.

3.3.2.1 Effluent Sample Results

Tables 1 and 2 show laboratory analytical results for pesticides and general parameters/metals, respectively. Pesticides were detected in the treated storm water discharge samples (TS2-E) from each of the four storm events sampled during the 2018-2019 reporting year. Total DDT⁹ was detected at concentrations ranging from 262.8 to 11,234 picograms per liter (pg/L); dieldrin was detected at concentrations ranging from 787 to 1,540 pg/L. TS-2 discharge results for all other pollutants (metals, O&G pH and TSS) were below the numeric action levels (NALs; State Water Resources Control Board, 2014) during the 2018-2019 reporting year.

⁶ The Consent Decree between the San Francisco Baykeeper and the Levin Richmond Terminal Corporation expired on December 31, 2018.

⁷ Changes to storm water monitoring was discussed during a telephone conversation on November 3, 2015 between Rachelle Thompson of EPA and Scott Bourne formerly of Weiss Associates.

⁸ Laboratory analytical reports include data for LRT storm water discharge points that are not located in the upland cap area (TS1-E, TS3-E, TS4-E).

⁹ Total DDT represents the sum of detected concentrations of 4,4' and 2,4'- isomers of DDT, DDD, and DDE and/or the detection limits for non-detected compounds.



3.3.2.2 Influent Sample Results

Samples of the combined influent to TS-2 (TS2-I) were collected during each of the four storm events. Influent samples were composited using the SW-3, SW-4, and the combined SW-5/6/7 influent feeds; volume from each feed was calculated based on the estimated runoff contribution to TS-2 discharge. Total DDT was detected in the influent at concentrations ranging from 6,516 to 40,573 pg/L; dieldrin was detected at concentrations ranging from 945 to 3,670 pg/L.

3.3.3 Quality Assurance/Quality Control

The O&M Plan stipulates that at least one duplicate sample be collected for analysis by EPA Method 8080 per storm sampling event. However, due to the change to EPA Method 1699, it was determined that a duplicate pesticide sample was no longer necessary. EPA Method 1699 employs high-resolution gas chromatography/high-resolution mass spectrometry with isotope dilution and internal standard quantification techniques to provide improved sensitivity and data quality. In future years, a duplicate sample can be collected upon EPA request.

Laboratory method detection limits (MDLs) for each DDT isomer, and the sum of the MDLs for all DDT isomers, were below the total DDT final surface water remediation level of 590 pg/L established in the ROD (EPA, 1994b) for all events. The MDL for dieldrin was below the final surface water remediation level of 140 pg/L.

No data quality issues were reported through the data validation process. Based on the data validation process, the data resulting from sampling and analysis are acceptable and complete.

3.3.4 Assessment of Results

Pesticides were detected in all TS-2 influent and effluent samples during the 2018-2019 reporting year. Total DDT was detected in one of the four effluent samples at concentrations above the surface water remediation level of 590 pg/L. Dieldrin was detected in all four effluent samples at concentrations above the surface water remediation level of 140 pg/L. Figures 4 and 5 present trend charts showing influent and effluent DDT and dieldrin concentrations from October 2015 to present¹⁰, including detected concentrations and MDLs when pesticides were not detected. Sample results from the 2018-2019 reporting year show that TS-2 is effective at reducing concentrations of total DDT, dieldrin, TSS and metals. While concentrations show a relatively high degree of variability within a rain year and between rain years, both influent and effluent concentrations in 2018-2019 reporting year were generally consistent with concentrations from previous years.

3.4 Storm Water Treatment System Operation

LRT received approximately 26 inches of rainfall¹² during the 2018-2019 reporting period. According to the LRTC, TS-2 provided sufficient treatment capacity to prevent treatment system bypass for all time periods when its operation was observed. No significant operation and maintenance concerns were encountered.

¹⁰ Concentration trend charts for DDT and dieldrin for individual storm water discharge locations from 2011 to 2015 are contained in the 2014-2015 Annual Report (Weiss, 2015).

¹¹ Denoted by "<n", where n is MDL, if available, or reporting limit otherwise.

¹² Rainfall from LRTC rain gauge.



4 ANNUAL SITE INSPECTION

Representatives of LRTC and CDIM inspected the upland cap on May 29, 2019. The inspection included visual observations of the concrete cap, gravel cover, and drainage system throughout the observable extent of the upland cap area. Appendix A includes photographs taken during the inspections. Figure 3 shows the locations of the photographs. Appendix C includes the inspection form.

4.1 Concrete Cap Inspection

Visual inspections concentrated on identifying signs of deterioration and exposure of the underlying subgrade at cracks, joints, high-loading areas, gravel and cap penetrations. Areas identified in the Fourth Five-Year Review (EPA, 2016) and the 2017-2018 Annual Report (CDIM, 2018) with cracks and potential settlement were reexamined.

- **SW-3 Area** No significant cracks or deterioration were noted in the SW-3 Area (Appendix A; Photo 3). Deteriorated concrete noted in the 2017-2018 Annual Report along the southern border of the cap, west of SW-3 was repaired (Appendix A; Photos 2a and 2b).
- **SW-4 Area** Minor surficial cracks and seams were observed in the bulk product storage area (Appendix A; Photos 4 and 5). Planter boxes have been installed along the property boundary (Appendix A; Photo 6).
- **SW-5 Area** No significant cracks or deterioration noted in the SW-5 Area (Appendix A; Photo 7). Settlement at the railroad track east of interceptor #5 (noted in the 2017-2018 annual report) was repaired (Appendix A; Photos 1a and 1b).
- **SW-6 Area** No significant cracks or deterioration were noted in the concrete in the SW-6 Area (Appendix A; Photo 9).
- **SW-7 Area** No significant cracks or deterioration were noted in the concrete in the SW-7 Area (Appendix A; Photo 10). Shotcrete applied to the northern shoreline of the Lauritzen Channel appeared to be in good condition (Appendix A; Photo 11)

No evidence of differential settling or vertical displacement was observed across the cap. No evidence of cracks, gaps, significant cap deterioration, or other material breach with apparent potential for exposure of the underlying subgrade was observed during the inspection. CDIM recommends that LRTC continue to monitor the cap for signs of deterioration.

4.2 Gravel Cover Inspection

Visual observations of the gravel cover concentrated on identifying areas where the gravel cover was thin. A geotextile membrane underlies the gravel cover, but it was not visually observed in any of the areas inspected. Below is a summary of observations from the concrete cap inspection.

- **SW-4 Area** The gravel cover appeared adequate; the underlying geotextile fabric was not exposed in any area (Appendix A; Photos 6 and 13).
- **SW-5 Area** The gravel cover appeared adequate; the underlying geotextile fabric was not exposed in any area (Appendix A; Photo 12).



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• **SW-6 Area** – The gravel cover appeared adequate; the underlying geotextile fabric was not exposed in any area (Appendix A; Photo 14).

No visual evidence of differential settling or vertical displacement was observed. Overall, the gravel cover was found to be in good condition and functioning properly with no apparent potential for exposure of the underlying subgrade. CDIM recommends that LRTC continue to regularly inspect the gravel cover and to perform maintenance as detailed in Section 5.



5 PROPOSED SITE WORK FOR 2019-2020

During the 2019-2020 reporting year, O&M activities will continue as follows:

- Storm water discharge samples will be collected from the TS-2 treatment system effluent (combined SW-3 through SW-7) discharge location. TS-2 influent samples will also be collected to evaluate system effectiveness.
- An annual inspection of the concrete cap and gravel cover in the upland cap area will be performed in the early summer of 2020.
- Regular inspections of the upland capping system, including the drainage system, will continue as part of the SWPPP (CDIM, 2018) compliance activities and daily operations.
- As needed, significant cracks will be filled, and deteriorated sections of concrete in the upland capping system will be replaced.

Proposed site work under the O&M Plan for 2019-2020 is presented in Table 3.

Any repairs to the cap, if required, will be documented and reported in a memorandum to the EPA and the California Department of Toxic Substances Control.



6 CONCLUSIONS AND RECOMMENDATIONS

The annual upland capping system inspection found that the surface cap is in overall good condition, and it effectively functions to prevent erosion of the underlying soil. Storm water sampling results from the upland cap area indicate that treatment system TS-2 is effective in reducing the discharge of pesticides.

CDIM recommends continuing the following maintenance and monitoring activities:

- Continue to monitor gravel cover areas and add gravel as needed;
- As needed, fill any significant cracks and replace deteriorated sections of concrete in the upland capping system;
- Implement regular inspections and BMPs identified in LRTC's SWPPP (CDIM, 2018); and,
- Continue to monitor storm water for pesticides as described herein.



7 REFERENCES

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TABLES



Table 1. 2018-2019 Annual Storm Water Sampling Data for Pesticides

Analytical results ^a																													
Discharge Location	2,4'-DDD	4,4'-DDD	2,4'-DDE	4,4'-DDE	2,4'-DDT	4,4'-DDT	Total DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	cis-Nonachlor	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC (Lindane)	gamma-Chlordane	Heptachlor	Heptachlor epoxide ^e	Hexachlorobenzene	Methoxychlor	Mirex	Oxychlordane	trans-Nonachlor
-	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L
INFLUENT																													
TS2-I ^b 11/27/2018 12/5/2018 1/11/2019 1/31/2019	1,200 1,090 4,960 1,250	2,260 2,070 10,400 2,360	44.7 173.0 693.0 269.0	985 3,150 9,860 3,830	356 1,310 3,860 1,700	1,670 4,660 10,800 4,580	6,516 12,453 40,573 13,989	17.2 J <8.36 43.8 18.2 J	20.5 J 82.5 51.0 51.2	1,800 340 2,820 931	67.9 35.7 J 69.6 48.6	79.0 <63.1 294 101	5.93 J <4.19 <11.7 <6.64	3,370 945 3,670 1,820	<30.8 <42.0 <152 <41.2	<112 <218 <325 <108	<25.8 <219 <437 <248	482 308 651 411	69.0 J <120 <166 <110	718 <429 <498 <320	13.3 J 62.1 45.7 56.8	631 269 1,840 608	<3.48 <7.83 37.0 J 16.8 J	285 257 1,313 1,062	48.4 B 510 B 1,230 B 1,030 B	<213 <528 <1,140 <3,050	<11.4 <94.6 <67.3 <58.5	30.4 J <26.5 <102 <26.3	426 140 1,040 319
EFFLUENT																													
TS2-E° 11/27/2018 12/5/2018 1/11/2019 1/31/2019	54.7 75.3 644 83.1	71.7 106 1,420 112	<1.26 <4.17 99.6 7.56 J	52.8 62.9 3,450 142	13.5 J 36.0 J 1,140 61.8	70.1 87.4 4,480 182	262.8 J 367.6 J 11,234 588	<3.30 <5.62 <13.9 <7.88	43.0 70.2 49.6 19.7 J	65.1 130 439 148	40.3 55.7 54.0 49.2	<7.19 <45.4 <37.8 <13.0	<2.05 <2.20 5.68 J <3.33	787 1,080 1,540 1,060	<15.0 <35.8 <57.0 <27.9	<24.0 <154 <53.1 <18.3	<10.7 <170 <65.0 <31.2	271 294 597 279	50.5 <66.6 <29.5 <14.4	495 573 545 629	30.3 J 42.7 36.2 J 11.9 J	34.1 J <25.0 311 82.4	<2.33 <6.74 <5.23 <9.38	<81.5 <142.9 512.8 2,022	12.6 J,B 13.3 J,B 106 B 25.1 J,B	<6.75 <107 <147 <5.17	<5.25 <55.8 <10.0 <6.86	<13.1 <24.8 <44.5 <26.2	<11.9 <26.8 173 <27.3*
Remediation Goa	ıl ^d						590							140															

Notes:

Detected concentrations of pesticides are displayed in **bold**.

- * Not detected; reported value is estimated maximum possible concentration.
- ^a Laboratory method EPA 1699.
- ^b TS2-I is the combined influent from interceptors SW-3 to SW-7 and does not represent discharge. It is used to evaluate TS-2 effectiveness.
- ^c TS2-E is the effluent of treatment system TS-2, which treats storm water from interceptors SW-3 to SW-7. It represents facility discharge.
- d Remediation goal from USEPA Superfund Record of Decision: United Heckathorn Co., October 1994, for surface waters in the Lauritzen, Santa Fe, and lower Richmond Inner Harbor Channels.
- ^e Reported result is sum of detected cis- and trans-heptachlor epoxide concentrations.

Acronyms/Abbreviations:

- < n =not detected above the sample-specific estimated <u>detection</u> limit
- B = compound was also detected in laboratory method blank
- D = sample diluted for analysis; concentration calculated value

J = concentration reported is an estimated value pg/L = picograms per liter

USEPA = United States Environmental Protection Agency



Table 2. 2018-2019 Annual Storm Water Sampling Data for General Parameters and Metals

		Analytical Parameters ^a														
Discharge Location	Notes	Нd	O&G (HEM)		TSS		Aluminum		Copper	ľon			Lead		Zinc	
		-	mg/L	m	ng/L		μg/L		μg/L	μg	'L		μg/L		μg/L	
INFLUENT																
TS2-l ^b 11/27/2018 12/5/2018 1/11/2019 1/31/2019		7.66 7.87 7.69 7.65	<5.49 <5.49 <5.32 <5.56		7.2 56 77 55		54 592 904 318	J	28.7 9.42 	70 1,1 (1,9 (96	60 90		1.66 9.87 21.3 8.89	В	38.9 85.4 110 87.1	
EFFLUENT																
TS2-E ^c 11/27/2018 12/5/2018 1/11/2019 1/31/2019		7.61 7.97 7.95 7.86	<5.44 <5.26 <5.68 1.01	0	0.7).43 4.8 0.8	J J	30 26.1 95.7 41.3]]]	7.65 7.39 	27 3 ² 16 24	l 9	J	2.07 0.561 2.17 0.966	B J J	77.6 29.4 36.9 61.7	
2014 IGP Num	6.0-9.0 ^e	15	1	100		750		33.2	1,0	00		262		260		

Notes:

Bold values exceed 2014 IGP NALs listed at the bottom of the table.

Acronyms/Abbreviations:

< n =not detected above the detection limit

B = analyte was present in the associated method blank

EPA = Environmental Protection Agency

IGP = Industrial General Permit

J = concentration reported is an estimated value

mg/L = milligrams per liter

NAL = numeric action level

O&G HEM = oil and grease, hexane extractable material

TSS = total suspended solids

ug/L = micrograms per liter

^a Laboratory Methods: pH by SM4500HB; TSS by SM2540D, O&G by EPA 1664A; metals by EPA 200.8.

^b TS2-I is the combined influent from interceptors SW-3 to SW-7 and does not represent discharge. It is used to evaluate TS-2 effectiveness.

^c TS2-E is the effluent of treatment system TS-2, which treats storm water from interceptors SW-3 to SW-7.

^d Numeric Action Level (NAL) in 2014 General Permit for Storm Water Discharges Associated with Industrial Activities (2014 IGP). California State Water Resources Control Board, April 1, 2014. Annual average unless otherwise noted.



Table 3. Proposed Site Work for 2019-2020, Levin Richmond Terminal Corporation

Aspect	Description	Anticipated Completion Date
General	Implement activities (i.e., cap maintenance, storm water monitoring, interceptor cleanout) described in the O&M Plan. ¹	Continuously
	Submit report of O&M performed for the period of July 1, 2019 to June 30, 2020.	On/around August 15, 2020
Concrete Cap	Perform 2019-2020 annual inspection of the cap under oversight of a registered engineer.	June 1, 2020
	Perform the third triennial survey of the upland cap area to monitor for differential settlement.	June 1, 2020
	Monitor identified cracks, seals, and joints for signs of propagation and/or degradation throughout upland capping system.	Continuously
Gravel Cover	Monitor the gravel cover throughout the Upland Area for signs of thinning or ground exposure.	Continuously
Storm Water System	Continue to treat combined storm water pumped from interceptors SW-3, SW-4, SW-5, SW-6, and SW-7 at treatment system TS-2 using flocculation, settling, and filtration methods.	Continuously

^{1.} Revised Draft Operations and Maintenance Plan, Upland Capping System, Former United Heckathorn Site, PES Environmental, Inc., March 1999.

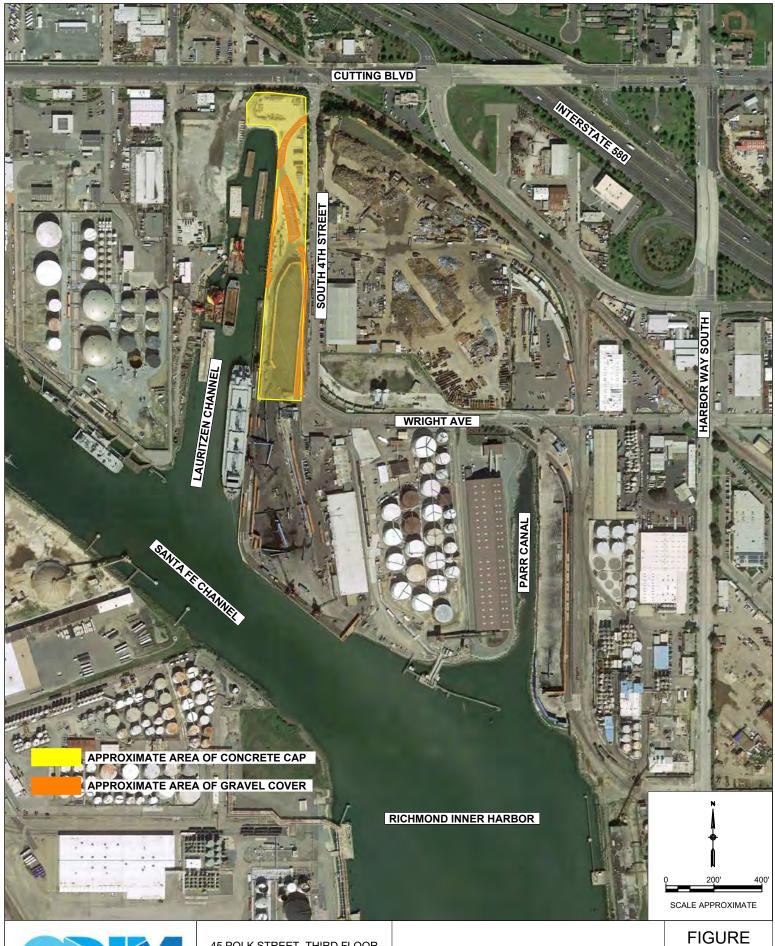


FIGURES





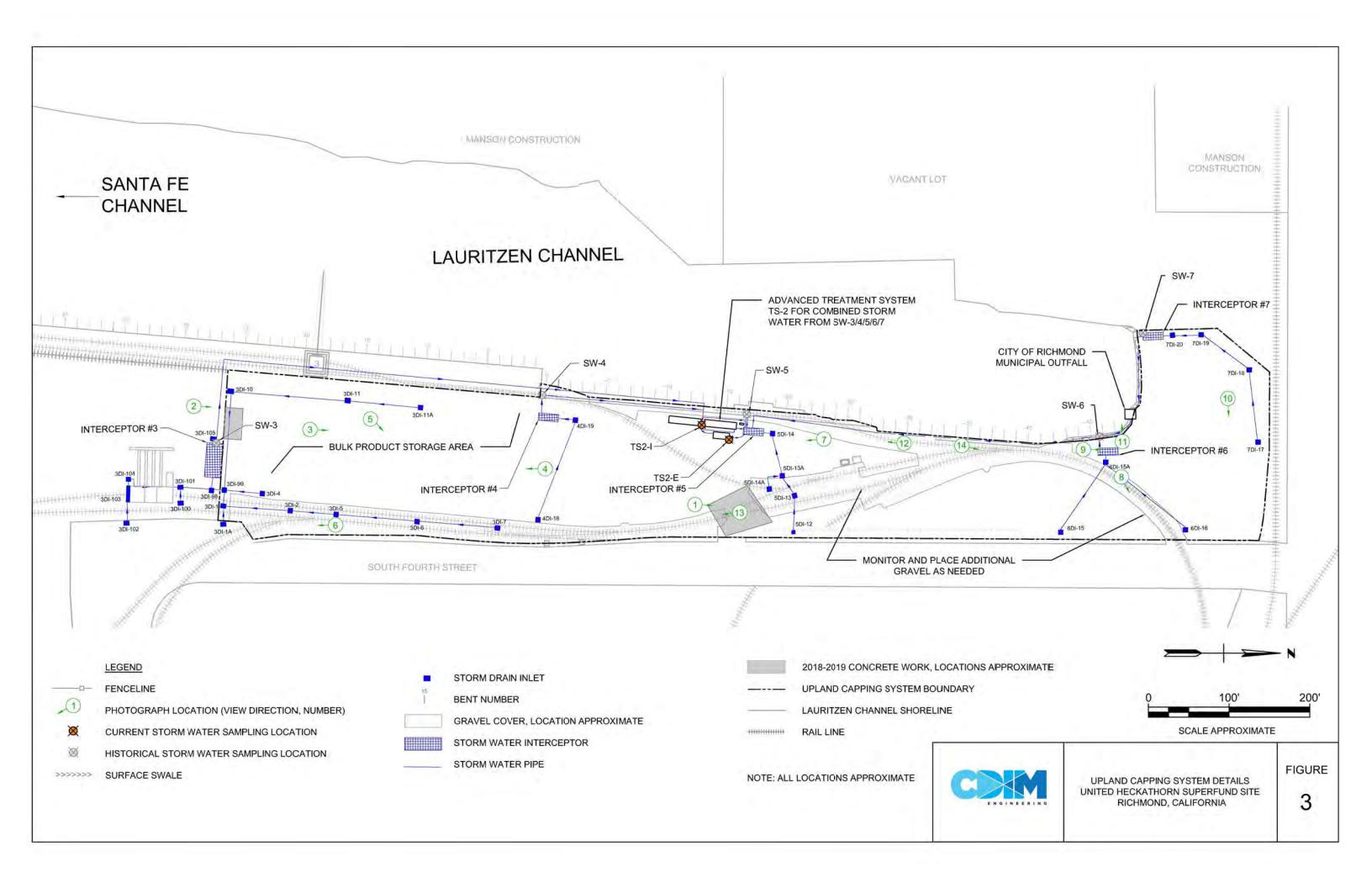
45 POLK STREET, THIRD FLOOR SAN FRANCISCO, CA 94102 WWW.CDIMENGINEERING.COM PH: (415) 498-0535 SITE LOCATION MAP UNITED HECKATHORN SUPERFUND SITE UPLAND CAPPING SYSTEM RICHMOND, CALIFORNIA **FIGURE**

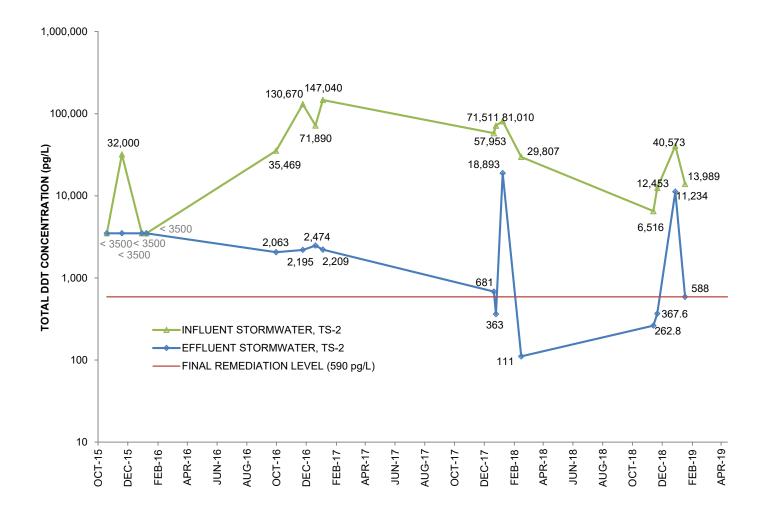




45 POLK STREET, THIRD FLOOR SAN FRANCISCO, CA 94102 WWW.CDIMENGINEERING.COM PH: (415) 498-0535

SITE LAYOUT UNITED HECKATHORN SUPERFUND SITE UPLAND CAPPING SYSTEM RICHMOND, CALIFORNIA





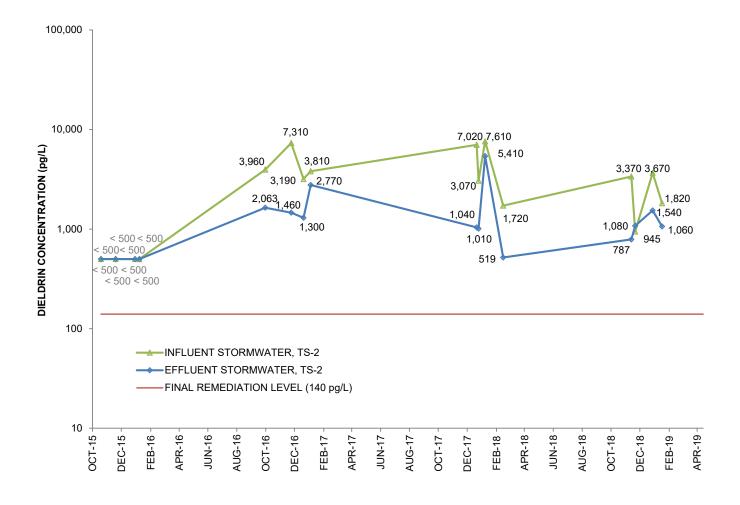
NOTES:

- 1. TOTAL DDT REPRESENTS THE SUM OF DETECTED DDT, DDD, AND DDE CONCENTRATIONS AND/OR DETECTION LIMITS FOR NON-DETECTED COMPOUNDS (DENOTED BY < N).
- 2. RESULTS REPORTED IN pg/L



45 POLK STREET, THIRD FLOOR SAN FRANCISCO, CA 94102 WWW.CDIMENGINEERING.COM PH: (415) 498-0535 TOTAL DDT IN STORMWATER, 2015-2019 TREATMENT SYSTEM TS-2 UNITED HECKATHORN SUPERFUND SITE UPLAND CAPPING SYSTEM RICHMOND, CALIFORNIA

FIGURE



NOTES:

1. RESULTS REPORTED IN pg/L



45 POLK STREET, THIRD FLOOR SAN FRANCISCO, CA 94102 WWW.CDIMENGINEERING.COM PH: (415) 498-0535 DIELDRIN IN STORMWATER, 2015-2019 TREATMENT SYSTEM TS-2 UNITED HECKATHORN SUPERFUND SITE UPLAND CAPPING SYSTEM RICHMOND, CALIFORNIA

FIGURE



APPENDIX A

Upland Capping System Inspection Photographs





Photo 1a – Photo taken during the 2017-2018 Annual Upland Capping System Inspection. Deteriorated concrete was visible at railroad crossing. This photograph was taken prior to repairs.



Photo 1b – Photo taken during the 2018-2019 Annual Upland Capping System Inspection. Areas with deteriorating concrete noted in the 2017-2018 inspection have been repaired.





Photo 2a – Deteriorated concrete noted in the 2018-2019 Annual Upland Capping System Inspection, located south of the bulk storage area and east of SW-3. This photograph was taken prior to repairs.



Photo 2b – Area with deteriorated concrete noted in the 2018-2019 inspection have been repaired.



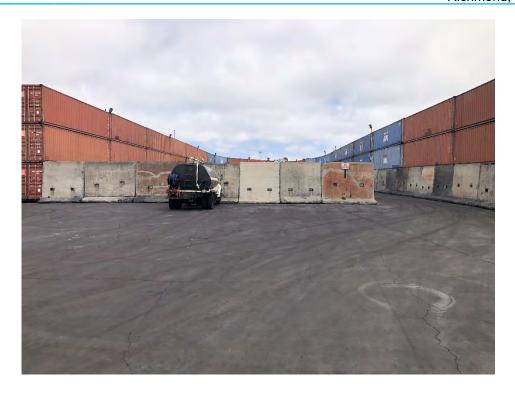


Photo 3 – Looking north at the area south of the secondary bulk product storage area. No significant cracking or deterioration is visible.



Photo 4 – Looking south: surficial cracking within secondary storage area.





Photo 5 – Looking northeast: seams and surficial cracking within secondary storage area.



Photo 6 – Gravel cover along the east border of the property. Planter boxes have been installed along the fence line.





Photo 7 – Looking south toward TS-2, no significant cracks or deterioration noted in the area.



Photo 8 – Looking northeast near northeast gate. No significant cracks or deterioration noted in the area. Gravel cover along railroad tracks appears adequate, with no underlying geotextile exposed.





Photo 9 – Looking north toward SW-6 no significant crack or deterioration noted in the area.



Photo 10 – Looking east at concrete cap north of the Lauritzen Channel. No significant cracks or deterioration noted in the area.





Photo 11 – Looking west toward the municipal outfall, at the north end of the Lauritzen Channel. Shotcrete has been applied to stabilize the area along the shoreline

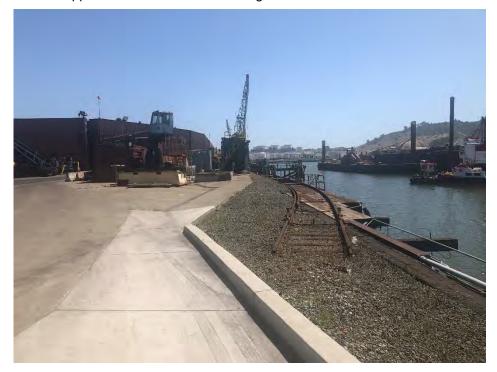


Photo 12 – Looking south: gravel cover is visible along the Lauritzen Channel north of TS-2.



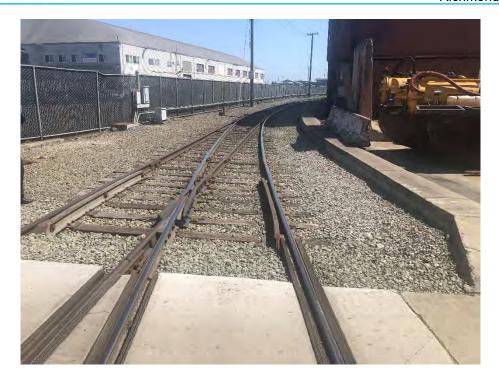


Photo 13 – Looking south along eastern border of the site. Concrete repair work performed in 2018-2019 (see photo 1a and 1b) and the gravel cover that has been maintained along rail lines.



Photo 14 – Looking north at the concrete cap and gravel cover along Lauritzen Channel.



APPENDIX B

Laboratory Analytical Reports



ANALYTICAL REPORT

December 06, 2018

CDIM Engineering - San Francisco, CA

Sample Delivery Group: L1048432 Samples Received: 11/30/2018

Project Number: 101-003, TASK 1

Description: LRTC 2018-2019 Industrial Stormwater 402 WRIGHT AVE, RICHMOND, CA Site:

Report To: Mary Cunningham

45 Polk Street

3rd Floor

San Francisco, CA 94102

Entire Report Reviewed By:

Buar Ford

Brian Ford Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



Cp: Cover Page		1					
Tc: Table of Cor	2						
Ss: Sample Sum	Ss: Sample Summary						
Cn: Case Narrat	ive	4					
Sr: Sample Resu	ults	5					
TS1-E-181127	L1048432-01	5					
TS2-E-181127	L1048432-02	6					
TS3-E-181127	L1048432-03	7					
TS4-E-181127	L1048432-04	8					
TSX-E-181127	L1048432-05	9					
Qc: Quality Con	trol Summary	10					
Gravimetric A	nalysis by Method 2540 D-2011	10					
Wet Chemistr	y by Method 1664A	11					
Wet Chemistr	Wet Chemistry by Method 4500H+ B-2011						
Metals (ICPM:	S) by Method 200.8	13					
GI: Glossary of T	Terms	14					
Al: Accreditation	ns & Locations	15					
Sc: Sample Cha	in of Custody	16					



















NATIONWIDE.

\circ	NIE	LAB.	1
U		LAD.	ı

TS1-E-181127 L1048432-01 WW			Collected by BS	Collected date/time 11/27/18 16:08	Received date/time 11/30/18 09:00
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1204187	1	12/03/18 14:09	12/03/18 15:03	AJS
Wet Chemistry by Method 1664A	WG1205385	1	12/04/18 09:55	12/04/18 14:08	ALA
Wet Chemistry by Method 4500H+ B-2011	WG1204036	1	12/01/18 13:46	12/01/18 13:46	KBW
Metals (ICPMS) by Method 200.8	WG1204013	1	12/02/18 23:12	12/04/18 12:42	LAT
			Collected by	Collected date/time	Received date/time
TS2-E-181127 L1048432-02 WW			BS	11/27/18 16:39	11/30/18 09:00
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1204187	1	12/03/18 14:09	12/03/18 15:03	AJS
Wet Chemistry by Method 1664A	WG1205385	1	12/04/18 09:55	12/04/18 14:08	ALA
Wet Chemistry by Method 4500H+ B-2011	WG1204036	1	12/01/18 13:46	12/01/18 13:46	KBW
Metals (ICPMS) by Method 200.8	WG1204013	1	12/02/18 23:12	12/04/18 13:51	LAT
			Collected by	Collected date/time	Received date/time
TS3-E-181127 L1048432-03 WW			BS	11/27/18 17:02	11/30/18 09:00
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1204187	1	12/03/18 14:09	12/03/18 15:03	AJS
Wet Chemistry by Method 1664A	WG1205385	1	12/04/18 09:55	12/04/18 14:08	ALA
Wet Chemistry by Method 4500H+ B-2011	WG1204036	1	12/01/18 13:46	12/01/18 13:46	KBW
Metals (ICPMS) by Method 200.8	WG1204013	1	12/02/18 23:12	12/04/18 13:55	LAT
			Collected by	Collected date/time	Received date/time
TS4-E-181127 L1048432-04 WW			BS	11/27/18 17:15	11/30/18 09:00
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1204187	1	12/03/18 14:09	12/03/18 15:03	AJS
Wet Chemistry by Method 1664A	WG1205385	1	12/04/18 09:55	12/04/18 14:08	ALA
Wet Chemistry by Method 4500H+ B-2011	WG1204036	1	12/01/18 13:46	12/01/18 13:46	KBW

WG1204013

Batch

WG1204187

WG1205385

WG1204036

1

Dilution

1

1

12/02/18 23:12

Collected by

Preparation

12/03/18 14:09

12/04/18 09:55

12/01/18 13:46

date/time

BS

12/04/18 13:59

11/27/18 16:08

Analysis

date/time

12/03/18 15:03

12/04/18 14:08

12/01/18 13:46

Collected date/time

LAT

Received date/time

Analyst

AJS

ALA KBW

11/30/18 09:00

SAMPLE SUMMARY





















CDIM Engineering - San Francisco, CA

Metals (ICPMS) by Method 200.8

Wet Chemistry by Method 1664A

Method

TSX-E-181127 L1048432-05 WW

Gravimetric Analysis by Method 2540 D-2011

Wet Chemistry by Method 4500H+ B-2011



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.























Buar Ford

Sample Handling and Receiving

The following analysis were performed from an unpreserved, insufficiently or inadequately preserved sample.

Lab Sample ID L1048432-05

Project Sample ID TSX-E-181127

Method 1664A

CDIM Engineering - San Francisco, CA

ONE LAB. NATIONWIDE.

Collected date/time: 11/27/18 16:08

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	U		361	2580	1	12/03/2018 15:03	WG1204187



Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		806	5560	1	12/04/2018 14:08	WG1205385



Ss

Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	SU			date / time	
рН	7.40	T8	1	12/01/2018 13:46	WG1204036



Sample Narrative:

L1048432-01 WG1204036: 7.4 at 18.2C

Gl

Metals (ICPMS) by Method 200.8

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	20.6	<u>J</u>	20.0	100	1	12/04/2018 12:42	WG1204013
Iron	U		15.0	100	1	12/04/2018 12:42	WG1204013
Lead	1.00	ВJ	0.260	1.00	1	12/04/2018 12:42	WG1204013
Zinc	96.8		1.91	10.0	1	12/04/2018 12:42	WG1204013



ΆΙ

ONE LAB. NATIONWIDE.

Collected date/time: 11/27/18 16:39

L1048432

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	700	<u>J</u>	350	2500	1	12/03/2018 15:03	WG1204187



Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		788	5440	1	12/04/2018 14:08	WG1205385



Ss

Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	Su			date / time	
рН	7.61	<u>T8</u>	1	12/01/2018 13:46	WG1204036



Cn

Sample Narrative:

L1048432-02 WG1204036: 7.61 at 18.4C

⁷Gl

Metals (ICPMS) by Method 200.8

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch		
Analyte	ug/l		ug/l	ug/l		date / time			
Aluminum	30.0	J	20.0	100	1	12/04/2018 13:51	WG1204013		
Copper	7.65		0.270	1.00	1	12/04/2018 13:51	WG1204013		
Iron	271		15.0	100	1	12/04/2018 13:51	WG1204013		
Lead	2.07	В	0.260	1.00	1	12/04/2018 13:51	WG1204013		
Zinc	77.6		1.91	10.0	1	12/04/2018 13:51	WG1204013		





CDIM Engineering - San Francisco, CA

ONE LAB. NATIONWIDE.

Collected date/time: 11/27/18 17:02

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	3000	<u>J P1</u>	700	5000	1	12/03/2018 15:03	WG1204187





L1048432-03 WG1204187: Sample split with duplicate.

Ss

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		788	5440	1	12/04/2018 14:08	WG1205385



Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	su			date / time	
рН	7.30	<u>T8</u>	1	12/01/2018 13:46	<u>WG1204036</u>



Gl

Sample Narrative:

L1048432-03 WG1204036: 7.3 at 18.1C



Sc

Metals (ICPMS) by Method 200.8

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	27.5	J	20.0	100	1	12/04/2018 13:55	WG1204013
Iron	1520		15.0	100	1	12/04/2018 13:55	WG1204013
Lead	2.54	В	0.260	1.00	1	12/04/2018 13:55	WG1204013
Zinc	68.9		1.91	10.0	1	12/04/2018 13:55	WG1204013

Analyte

Suspended Solids

SAMPLE RESULTS - 04 L1048432

ONE LAB. NATIONWIDE.

Collected date/time: 11/27/18 17:15

Gravimetric Analysis by Method 2540 D-2011

Qualifier

MDL

ug/l

350

Result

ug/l

700

WG1204187

12/03/2018 15:03



Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		788	5440	1	12/04/2018 14:08	WG1205385

2500



Ss

Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	Su			date / time	
pH	7.44	<u>T8</u>	1	12/01/2018 13:46	WG1204036



СQс

Cn

Sample Narrative:

L1048432-04 WG1204036: 7.44 at 17.6C

Gl

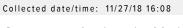
ΆΙ

Metals (ICPMS) by Method 200.8

_	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	58.8	<u>J</u>	20.0	100	1	12/04/2018 13:59	WG1204013
Iron	71.0	<u>J</u>	15.0	100	1	12/04/2018 13:59	WG1204013
Lead	1.67	<u>B</u>	0.260	1.00	1	12/04/2018 13:59	WG1204013
Zinc	83.8		1.91	10.0	1	12/04/2018 13:59	WG1204013

CDIM Engineering - San Francisco, CA

ONE LAB. NATIONWIDE.



Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	1000	<u>J P1</u>	700	5000	1	12/03/2018 15:03	WG1204187



Sample Narrative:

L1048432-05 WG1204187: Sample split with duplicate.

Ss

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	1090	J	788	5440	1	12/04/2018 14:08	WG1205385



Sample Narrative:

L1048432-05 WG1205385: Duplicate analysis could not be performed due to limited sample volume.



Gl

Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	su			date / time	
рН	7.75	<u>T8</u>	1	12/01/2018 13:46	WG1204036



Sample Narrative:

L1048432-05 WG1204036: 7.75 at 17.4C

ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 D-2011

U

L1048432-01,02,03,04,05

Method Blank (MB)

(MB) R3365042-1 12/03/	18 15:03			
	MB Result	MB Qualifier	MB MDL	
Analyte	ug/l		ug/l	









(OS) L1048432-03 12/03/18 15:03 • (DUP) R3365042-3 12/03/18 15:03

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Suspended Solids	3000	2400	1	22.2	J P1	5

350

MB RDL ug/l

2500







Suspended Solids

OS: Sample split with duplicate.



L1048432-05 Original Sample (OS) • Duplicate (DUP)

(OS) | 10/18/132-05 | 12/03/18 | 15:03 • (DI IP) | P33650/12-/ | 12/03/18 | 15:03

(03) [1040432-03 12/03/1	Original Result	•		DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Suspended Solids	1000	0.000	1	200	P1	5



Sample Narrative:

OS: Sample split with duplicate.

Laboratory Control Sample (LCS)

(LCS) R3365042-2 12	(LCS) R3365042-2 12/03/18 15:03							
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier			
Analyte	ug/l	ug/l	%	%				
Suspended Solids	773000	776000	100	85 O-115				

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 1664A

L1048432-01,02,03,04,05

Method Blank (MB)

 (MB) R3365254-1
 12/O4/18
 11:56

 MB Result
 MB Qualifier
 MB MDL
 MB RDL

 Analyte
 ug/l
 ug/l
 ug/l

 TPH - Oil & Grease
 U
 725
 5000







Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3365254-2 12/04	(LCS) R3365254-2 12/04/18 11:56 • (LCSD) R3365254-3 12/04/18 11:56									
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
TPH - Oil & Grease	20000	17300	15600	86.5	78 N	64 O-132			10.3	18













ONE LAB. NATIONWIDE.

Wet Chemistry by Method 4500H+ B-2011

L1048432-01,02,03,04,05

L1048183-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1048183-01 12/01/18 13:46 • (DUP) R3364437-3 12/01/18 13:46

		Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
A	Analyte	SU	SU		%		%
ŗ	Н	9.77	9.73	1	0.410		1



Sample Narrative:

OS: 9.77 at 19.6C DUP: 9.73 at 18.8C



Ss

L1048432-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1048432-05 12/01/18 13:46 • (DLIP) R3364437-4 12/01/18 13:46

(03) 11040432-03 12/01/16	Original Result			DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	SU	SU		%		%
рН	7.75	7.81	1	0.771		1



Sample Narrative:

OS: 7.75 at 17.4C DUP: 7.81 at 17.2C



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3364437-1 12/01/18 13:46 • (LCSD) R3364437-2 12/01/18 13:46

,	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	SU	su	su	%	%	%			%	%
На	10.0	10.0	10.1	100	101	99.0-101			0.398	1

Sample Narrative:

LCS: 10.04 at 19.7C LCSD: 10.08 at 19.8C

12/06/18 16:40

ONE LAB. NATIONWIDE.

Metals (ICPMS) by Method 200.8

L1048432-01,02,03,04

Method Blank (MB)

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Aluminum	U		20.0	100
Copper	U		0.270	1.00
Iron	U		15.0	100
Lead	0.351	<u>J</u>	0.260	1.00
7inc	U		1.91	10.0









⁵Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

LCS) R3365145-2 12/04/18 12:18 • (LCSD) R3365145-3 12/04/18 12:22										
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Aluminum	5000	4900	5080	98.0	102	85.0-115			3.51	20
Copper	50.0	48.8	49.5	97.6	99.1	85.0-115			1.47	20
Iron	5000	4840	4870	96.7	97.4	85.0-115			0.738	20
Lead	50.0	48.1	48.0	96.3	96.0	85.0-115			0.327	20
Zinc	50.0	49.2	49.5	98.3	99.1	85.0-115			0.764	20











L1048417-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1048417-04 12/04/18 12:26 • (MS) R3365145-5 12/04/18 12:34 • (MSD) R3365145-6 12/04/18 12:38

(03) 11040417-04 12/0	4/10 12.20 • (IVIS) N	.3303143-3 12/	04/10 12.34 •	(IVISD) KSSUS14	J-0 12/0 4 /10 1	2.30						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Aluminum	5000	95.7	5160	5280	101	104	1	70.0-130			2.25	20
Copper	50.0	81.2	126	127	90.2	91.0	1	70.0-130			0.302	20
Iron	5000	230	4860	4930	92.5	94.0	1	70.0-130			1.56	20
Lead	50.0	5.65	54.3	53.5	97.3	95.7	1	70.0-130			1.52	20
Zinc	50.0	73.9	124	123	99.6	97.4	1	70.0-130			0.899	20

L1048432-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1048432-01 12/04/18 12:42 • (MS) R3365145-7 12/04/18 12:46 • (MSD) R3365145-8 12/04/18 12:50

(OS) L1048432-01 12/04/	10 12.42 • (IVIS) R	3303145-7 12/1	04/16 12.46 • (1	VISD) KSS65145	0-0 12/04/10 12	.50						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Aluminum	5000	20.6	5290	5280	105	105	1	70.0-130			0.226	20
Copper	50.0	2.25	52.5	53.5	100	102	1	70.0-130			1.91	20
Iron	5000	U	4950	5040	99.0	101	1	70.0-130			1.71	20
Lead	50.0	1.00	49.1	50.8	96.3	99.5	1	70.0-130			3.26	20
Zinc	50.0	96.8	146	150	97.6	106	1	70.0-130			2.73	20

GLOSSARY OF TERMS

ONE LAB. NATIONWIDE.

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

В	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.



















ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky ^{1 6}	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	
A2LA - ISO 17025 5	1461.02	
Canada	1461.01	
EPA-Crypto	TN00003	

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.





















CHAIN OF CUSTODY RECORD

G033

LABORATO			INSTRUCTIONS F	OR LAB PER	RSONNEL:			Ana	lysis T	urner	oud Tim	e X	Standa	rd n	Other						
(615) 773-9772 the original chain- bas@cdimenginee									GeoTracker EDF required? □ Yes X No LOCUS EDD required? □ Yes X No Report Results to: □ RL X MDL Report soil results to: □ wet weight (total) □ dry weight							No	Specify analytic/prep method and detection limit in repo Notify us of any anomalous peaks in GC or other scans Call immediately with any questions or problems.				
CDIM Engir			Project Manager: Bryan Starks Phone Number 415-498-0535 Sampled by:					T _a	9			1	ANALYS	IS REQ			1	-		COC Number:	
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	NFORMATION	N 019 Industrial Stormwater				100		(SM		Pb, Zn	Fe, Pb, 2			1		477				Page of	
Job#:	101-003, Tasi						18)	led Soll	EPA 16	CP.MSI	MS)								- 4	SDG number:	
Address:	402 Wright Av	venue, Richmond CA 94804					PH (SM 4500HB)	Suspended Solids	Grease (EPA 1664A	Metals- /	岩田							131		1648432	
Lab ID		nple Identification	Sample Date	Sample Time	Sample Matrix	# of Cont.	Hd (S)	Total S	OIISG	Total N	Total N (EPA 2									Sample Specific Notes:	
	TS1-E		1/27/18	1608	W	5	X	-	X	X										01	
5.5	TS3-E			1639	W		X	X	Х		X		- 1	1						0.	
t- Leite	TS4-E	A Property of the Park of the		1702	W		X	X	Х	X										0	
1000		ALCOHOLD TO THE CONTRACTOR		1715	W	de ,	X	X	Х	X										0	
-	TSX-E	181171	J	1608	W	*7	X	X	Х											Perform MS/MSD using additional volum provided	
-																				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
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	MITTER OF			THE RES	Field Filt	ered (X):	2						-	+	-	-	+		-	1	
Preserv	ation Used: 1=	Ice, 2= HCI; 3= H ₂ SO ₄ ; 4=	HNO ₃ ; 5=NaOH; 6= Oth	er			1	1	1, 3	1.4	1.4	+	-	+	-	-	-	-	-		
		Requirements & Com	Section 1	port. Repor	t with rep	orting lim	it an	d me	thod	dete	ction I	imit.	Analyz	and re	port	only th	e meta	ls liste	d abov	е.	
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Relinquished b	y:	P- 100	Company:		Date/Time:		Recei	erived by: 120. Company					ompany				Date/Time:				
	x = Samples	released to a secured, loc	ked area.			100		Samples received from a secured, locked area Company								11/30/18 0900					
		SAMPLERS NAME	Songan Stal	3	4.1		130	1	- 0		MOBILE	USS 300	a secur			SC	izx	\$		4,95.22	
1	100	SAMPLERS SIGNATURE	A ST	2	874	7	I.		7.5	100	DATE /	TIME		T. S. Tamor		8/				5.22	
			00		4-		4	1	100					STATE OF THE PARTY		27			1/3/	H 373-9	

Pace Analytical National Cent Cooler Rec		ation	
Client: CDIENGSECA		10484	32
Cooler Received/Opened On: 11/30/18	Temperature:	52	
Received By: Keteishia Cameron			
Signature: KCumerO			
Receipt Check List	NP	Yes	No
COC Seal Present / Intact?			
COC Signed / Accurate?		(10000
Bottles arrive intact?	100	-	- Colonia de la
Correct bottles used?		11	1000000
Sufficient volume sent?			
If Applicable			
VOA Zero headspace?		/	
Preservation Correct / Checked?			



L1048432

Evaluated by: Kelsey S Date: 11/30 Client: CDIENGSFCA Login #:L1048417 18/14

Non-Conformance (check applicable item:

Sample Integrity	Chain of Custody Clarification	
Parameter(s) past holding time	x Login Clarification Needed	If Broken Container:
Temperature not in range	Chain of custody is incomplete	Insufficient packing material around container
Improper container type	Please specify Metals requested.	Insufficient packing material inside cooler
pH not in range.	Please specify TCLP requested.	Improper handling by carrier (FedEx / UPS / Courie
Insufficient sample volume.	Received additional samples not listed on coc.	Sample was frozen
Sample is biphasic.	Sample ids on containers do not match ids on coc	Container lid not intact
Vials received with headspace.	Trip Blank not received.	If no Chain of Custody:
Broken container	Client did not "X" analysis.	Received by:
Broken container:	Chain of Custody is missing	Date/Time;
Sufficient sample remains		Temp./Cont. Rec./pH:
A STANDARD OF THE		Carrier:
		Tracking#

Login Comments: Client sent metals containers for ID TSX-E-181127 but did not mark any metal analysis. There is also a comment to Preform MS/MSD using additional volume sample for that ID.

Rient informed by:	Call	Email x	Voice Mail	Date:12/04/18	Time:0900
TSR Initials:bif	Client Contact	: PMs			

Login Instructions:

Run lab duplicate analysis for TSX-E-181127, place metals on hold.



ANALYTICAL REPORT

December 06, 2018

CDIM Engineering - San Francisco, CA

Sample Delivery Group: L1048417

Samples Received: 11/30/2018

Project Number: 101-003, TASK 1

Description: LRTC 2018-2019 Industrial Stormwater 402 WRIGHT AVE, RICHMOND, CA Site:

Report To: Mary Cunningham

45 Polk Street

3rd Floor

San Francisco, CA 94102

Entire Report Reviewed By:

Buar Ford

Brian Ford Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



Cp: Cover Page	1					
Tc: Table of Contents						
Ss: Sample Summary						
Cn: Case Narrative	4					
Sr: Sample Results	5					
TS1-I-181127 L1048417-01	5					
TS2-I-181127 L1048417-02	6					
TS3-I-181127 L1048417-03	7					
TS4-I-181127 L1048417-04	8					
Qc: Quality Control Summary	9					
Gravimetric Analysis by Method 2540 D-2011	9					
Wet Chemistry by Method 1664A						
Wet Chemistry by Method 4500H+ B-2011						
Metals (ICPMS) by Method 200.8						
GI: Glossary of Terms						
Al: Accreditations & Locations	14					
Sc: Sample Chain of Custody						





















			Collected by	Collected date/time	Received date/time
TS1-I-181127 L1048417-01 WW			BS	11/27/18 15:48	11/30/18 09:00
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1204187	1	12/03/18 14:09	12/03/18 15:03	AJS
Wet Chemistry by Method 1664A	WG1206239	1	12/05/18 16:08	12/05/18 20:02	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1204036	1	12/01/18 13:46	12/01/18 13:46	KBW
Metals (ICPMS) by Method 200.8	WG1204013	1	12/02/18 23:12	12/04/18 13:39	LAT
			Collected by	Collected date/time	Received date/time
TS2-I-181127 L1048417-02 WW			BS	11/27/18 16:36	11/30/18 09:00
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1204187	1	12/03/18 14:09	12/03/18 15:03	AJS
Wet Chemistry by Method 1664A	WG1206239	1	12/05/18 16:08	12/05/18 20:02	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1204036	1	12/01/18 13:46	12/01/18 13:46	KBW
Metals (ICPMS) by Method 200.8	WG1204013	1	12/02/18 23:12	12/04/18 13:43	LAT
			Collected by	Collected date/time	Received date/time
TS3-I-181127 L1048417-03 WW			BS	11/27/18 16:56	11/30/18 09:00
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1204187	1	12/03/18 14:09	12/03/18 15:03	AJS
Wet Chemistry by Method 1664A	WG1206239	1	12/05/18 16:08	12/05/18 20:02	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1204036	1	12/01/18 13:46	12/01/18 13:46	KBW
Metals (ICPMS) by Method 200.8	WG1204013	1	12/02/18 23:12	12/04/18 13:47	LAT
			Collected by	Collected date/time	Received date/time
TS4-I-181127 L1048417-04 WW			BS	11/27/18 17:23	11/30/18 09:00
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1204187	1	12/03/18 14:09	12/03/18 15:03	AJS
Wet Chemistry by Method 1664A	WG1206239	1	12/05/18 16:08	12/05/18 20:02	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1204036	1	12/01/18 13:46	12/01/18 13:46	KBW

WG1204013

SAMPLE SUMMARY



















Metals (ICPMS) by Method 200.8

12/04/18 12:26

12/02/18 23:12

RDS

•

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

⁴Cn

Ss

⁵Sr









Brian Ford Project Manager

Buar Ford

ONE LAB. NATIONWIDE.

Collected date/time: 11/27/18 15:48

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	1050000		17500	125000	1	12/03/2018 15:03	WG1204187

Ss

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4 _	ı
Cn	ı



	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	1460	J	884	6100	1	12/05/2018 20:02	WG1206239



	Result	Qualifier	Dilution	Analysis	<u>Batch</u>
Analyte	SU			date / time	
рН	7.47	<u>T8</u>	1	12/01/2018 13:46	WG1204036





Gl

Sample Narrative:

L1048417-01 WG1204036: 7.47 at 18.6C

ΆΙ

³Sc

Metals (ICPMS) by Method 200.8

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	7400		20.0	100	1	12/04/2018 13:39	WG1204013
Iron	6940		15.0	100	1	12/04/2018 13:39	WG1204013
Lead	110		0.260	1.00	1	12/04/2018 13:39	WG1204013
Zinc	351		1.91	10.0	1	12/04/2018 13:39	WG1204013

ONE LAB. NATIONWIDE.

Collected date/time: 11/27/18 16:36

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	7200		427	3050	1	12/03/2018 15:03	WG1204187

²Tc

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		797	5490	1	12/05/2018 20:02	WG1206239



Ss

Cn

Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	su			date / time	
рН	7.66	<u>T8</u>	1	12/01/2018 13:46	<u>WG1204036</u>



Sample Narrative:

L1048417-02 WG1204036: 7.66 at 18.2C

°Qc

Metals (ICPMS) by Method 200.8

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch			
Analyte	ug/l		ug/l	ug/l		date / time				
Aluminum	54.0	J	20.0	100	1	12/04/2018 13:43	WG1204013			
Copper	28.7		0.270	1.00	1	12/04/2018 13:43	WG1204013			
Iron	703		15.0	100	1	12/04/2018 13:43	WG1204013			
Lead	1.66	<u>B</u>	0.260	1.00	1	12/04/2018 13:43	WG1204013			
7inc	38.9		1 91	10.0	1	12/04/2018 13:43	WG1204013			





ONE LAB. NATIONWIDE.

Collected date/time: 11/27/18 16:56

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	24800		494	3530	1	12/03/2018 15:03	WG1204187

<u>Ср</u>

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		780	5380	1	12/05/2018 20:02	WG1206239



Cn

Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	SU			date / time	
pH	7.47	T8	1	12/01/2018 13:46	WG1204036



Sample Narrative:

L1048417-03 WG1204036: 7.47 at 17.9C

⁷Cl

Metals (ICPMS) by Method 200.8

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	1150		20.0	100	1	12/04/2018 13:47	WG1204013
Iron	2470		15.0	100	1	12/04/2018 13:47	WG1204013
Lead	85.2		0.260	1.00	1	12/04/2018 13:47	WG1204013
Zinc	150		1.91	10.0	1	12/04/2018 13:47	WG1204013





ΆΙ

ONE LAB. NATIONWIDE.

Collected date/time: 11/27/18 17:23

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	1520	J	354	2530	1	12/03/2018 15:03	WG1204187

²T₆

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		763	5260	1	12/05/2018 20:02	WG1206239



Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	Su			date / time	
рН	7.49	<u>T8</u>	1	12/01/2018 13:46	WG1204036



СQс

Sample Narrative:

L1048417-04 WG1204036: 7.49 at 17.7C

7 GI

Metals (ICPMS) by Method 200.8

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	95.7	<u>J</u>	20.0	100	1	12/04/2018 12:26	WG1204013
Iron	230		15.0	100	1	12/04/2018 12:26	WG1204013
Lead	5.65		0.260	1.00	1	12/04/2018 12:26	WG1204013
Zinc	73.9		1.91	10.0	1	12/04/2018 12:26	WG1204013



ΆΙ

ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 D-2011

U

ug/l

3000

L1048417-01,02,03,04

MB RDL ug/l

2500

DUP Qualifier

<u>J P1</u>

350

Dilution DUP RPD

%

22.2

Method Blank (MB)

(MB) R3365042-1 12/03/1	8 15:03			
	MB Result	MB Qualifier	MB MDL	
Analyte	ug/l		ug/l	





(OS) L1048432-03 12/03/18 15:03 • (DUP) R3365042-3 12/03/18 15:03

Original Result DUP Result

ug/l

2400

DUP RPD Limits
%
5



Analyte

Sample Narrative:

Suspended Solids

Suspended Solids

OS: Sample split with duplicate.

L1048432-05 Original Sample (OS) • Duplicate (DUP)

(OS) | 10/18/132-05 | 12/03/18 15:03 • (DLIP) P33650/12-/ 12/03/18 15:03

(03) 21040432-03 12/03/	Original Result	, ,			DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	и	ug/l		%		%
Suspended Solids	1000	0	0.000	1	200	P1	5

²Sc

Sample Narrative:

OS: Sample split with duplicate.

Laboratory Control Sample (LCS)

(LCS) R3365042-2 12/0	3/18 15:03				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Suspended Solids	773000	776000	100	85.0-115	

12/06/18 15:55 9 of 16

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 1664A

L1048417-01,02,03,04

Method Blank (MB)

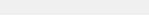
(MB) R3365632-1 12/05/18 20:02

MB Result

MB Qualifier

MB MDL

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
TPH - Oil & Grease	П		725	5000



2_





Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3365632-2 12/05/18 20:02 • (LCSD) R3365632-3 12/05/18 20:02

(200) 11000002 2 12	100110 20102 (200	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	- 0 12/00/10 20							
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
TPH - Oil & Grease	20000	19000	19800	95.0	99.0	64.0-132			4.12	18



[†]Cn











ONE LAB. NATIONWIDE.

Wet Chemistry by Method 4500H+ B-2011

L1048417-01,02,03,04

L1048183-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1048183-01 12/01/18 13:46 • (DUP) R3364437-3 12/01/18 13:46

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	SU		%		%
рН	9.77	9.73	1	0.410		1





Sample Narrative:

OS: 9.77 at 19.6C DUP: 9.73 at 18.8C





L1048432-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1048432-05 12/01/18 13:46 • (DLIP) R3364437-4 12/01/18 13:46

vito	Analyte su su % %	(03) 11046432-03 12/01/16	Original Result				DUP Qualifier	DUP RPD Limits
	Su /0 /0	cu cu		CII	2	9/	Jon Quamici	Limits









Sample Narrative:

OS: 7.75 at 17.4C DUP: 7.81 at 17.2C

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3364437-1 12/01/18 13:46 • (LCSD) R3364437-2 12/01/18 13:46

(,	Spike Amount		LCSD Result		LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	Su	SU	su	%	%	%			%	%
рН	10.0	10.0	10.1	100	101	99.0-101			0.398	1

Sample Narrative:

LCS: 10.04 at 19.7C

LCSD: 10.08 at 19.8C

ONE LAB. NATIONWIDE.

Metals (ICPMS) by Method 200.8

L1048417-01,02,03,04

Method Blank (MB)

(MB) R3365145-1	12/04/18 12:14
	140.0

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Aluminum	U		20.0	100
Copper	U		0.270	1.00
Iron	U		15.0	100
Lead	0.351	<u>J</u>	0.260	1.00
Zinc	U		1.91	10.0



Ср





⁵Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

LCS) R3365145-2 12/04/18 12:18 • (LCSD) R3365145-3 12/04/18 12:22											
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%	
Aluminum	5000	4900	5080	98.0	102	85.0-115			3.51	20	
Copper	50.0	48.8	49.5	97.6	99.1	85.0-115			1.47	20	
Iron	5000	4840	4870	96.7	97.4	85.0-115			0.738	20	
Lead	50.0	48.1	48.0	96.3	96.0	85.0-115			0.327	20	
Zinc	50.0	49.2	49.5	98.3	99.1	85.0-115			0.764	20	











L1048417-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1048417-04 12/04/18 12:26 • (MS) R3365145-5 12/04/18 12:34 • (MSD) R3365145-6 12/04/18 12:38

, ,	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Aluminum	5000	95.7	5160	5280	101	104	1	70.0-130			2.25	20
Copper	50.0	81.2	126	127	90.2	91.0	1	70.0-130			0.302	20
Iron	5000	230	4860	4930	92.5	94.0	1	70.0-130			1.56	20
Lead	50.0	5.65	54.3	53.5	97.3	95.7	1	70.0-130			1.52	20
Zinc	50.0	73.9	124	123	99.6	97.4	1	70.0-130			0.899	20

L1048432-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1048432-01 12/04/18 12:42 • (MS) R3365145-7 12/04/18 12:46 • (MSD) R3365145-8 12/04/18 12:50

(US) L1046432-U1 12/04/	(US) L1048432-01 12/04/18 12.42 • (MS) R3305145-7 12/04/18 12.40 • (MSD) R3305145-8 12/04/18 12.50											
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Aluminum	5000	20.6	5290	5280	105	105	1	70.0-130			0.226	20
Copper	50.0	2.25	52.5	53.5	100	102	1	70.0-130			1.91	20
Iron	5000	U	4950	5040	99.0	101	1	70.0-130			1.71	20
Lead	50.0	1.00	49.1	50.8	96.3	99.5	1	70.0-130			3.26	20
Zinc	50.0	96.8	146	150	97.6	106	1	70.0-130			2.73	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Description Qualifier

	·
В	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.

DATE/TIME:

12/06/18 15:55

PAGE:

13 of 16



















ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	
A2LA - ISO 17025 5	1461.02	
Canada	1461.01	
EPA-Crypto	TN00003	

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.





















CHAIN OF CUSTODY RECORD

		in the second				37	2		57											10				9	
ESC Labora 12065 Leba (615) 773-9 Brian Ford	atory anon Road, Mt. Juliet	INSTRUCTIONS FOR LAB PERSONNEL: Please send analytic results, electronic deliverables and the original chain-of-custody form to: bas@cdimengineering.com, mec@cdimengineering.com sab@cdimengineering.com						Analysis Turnaroud Time X Standard Other GeoTracker EDF required? Yes X No LOCUS EDD required? Yes X No Report Results to: RL X MDL Report soil results to: wet weight (total) dry weight									reight	Specify analytic/prep method and detection limit in report. Notify us of any anomalous peaks in GC or other scans. Call immediately with any questions or problems.							
CDIM CONTACT: CDIM Engineering 45 Polk Street, 3rd Floor San Francisco, California 94102			Project Manager: Bryan Starks									ANALYSIS REQUEST				_	ΓED			72 H-1		COC	COC Number:		
			Sampled by: 11/27/18						(2540D)	SGT-HEM)		Zn	THE REAL PROPERTY.	100	W. C.	4		No.					Page	of (
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Job Name: LRTC 2018-2019 Industrial Stormwater									Solida	A 1664A	Fe, Pb,	Cu, Fe,			ØH.	200	11		a.			200	SD	G number:	91
Job#: Address:	101-003, Task 1 402 Wright Avenue	, Richmond CA 94804						pH (SM 4500HB)	Total Suspended Solids (SM 2540D)	sease (EPA	Metals- Al, Fe, F	Metals- Al, 200,8 ICP-	ī.		6								104 8	417	
Lab ID	Sample	Identification	Sample D	ate	Sample Time	Sample Matrix	# of Cont.	MS) Hd	Total S	08.6	Total N	Total N (EPA 2	1 4			2					1		Sample	Specific Notes	2
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10.00	TS2-1-181/2	2)	1636	1.0	1636	w	Í	X	X	X	E	X				7		-					150		0100
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Pace Analytical National Center for Testing & Innovation Cooler Receipt Form									
Client: COLENGSFCA	1048417								
Cooler Received/Opened On: 11/30/18	Temperature:	52	100						
Received By: Keteishia Cameron			MIN						
Signature: BCumerCo									
Receipt Check List	NP	Yes	No						
COC Seal Present / Intact?									
COC Signed / Accurate?		/	and the state of						
Bottles arrive intact?		/							
Correct bottles used?		/	119/200						
Sufficient volume sent?		/	XI T						
If Applicable		E Carlo							
VOA Zero headspace?									
Preservation Correct / Checked?		/	1000						



December 14, 2018

Vista Work Order No. 1803776

Mr. Scott Bourne CDIM Engineering 45 Polk Street, 3rd Floor San Francisco, CA 94102

Dear Mr. Bourne,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on November 29, 2018 under your Project Name '101-003-LRTC, Task 1'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 ph; 916-673-1520 fx; 916-673-0106 www.vista-analytical.com

Work Order 1803776 Page 1 of 14

Vista Work Order No. 1803776 Case Narrative

Sample Condition on Receipt:

One water sample was received in good condition and within the method temperature requirements. The sample was received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

EPA Method 1699

The sample was extracted and analyzed for chlorinated pesticides by EPA Method 1699 using a ZB-50 GC column.

Holding Times

The sample was extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected above the sample quantitation limits in the Method Blank. The OPR recoveries were within the method acceptance criteria.

Labeled standard recoveries for all QC and field samples were within method acceptance criteria.

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1803776-01	TS2-E-181127	27-Nov-18 16:36	29-Nov-18 08:10	Amber Glass NM Bottle, 1L
				Amber Glass NM Bottle, 1L
				Amber Glass NM Bottle, 1L

Vista Project: 1803776 Client Project: 101-003-LRTC, Task 1

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ANALYTICAL RESULTS

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Sample ID: Method Blank EPA Method 1699

Matrix: Aqueous QC Batch: B8L0002 Lab Sample: B8L0002-BLK1

Sample Size: 1.00 L Date Extracted: 03-Dec-2018 6:10 Date Analyzed: 06-Dec-18 02:43 Column: ZB-50

Analyte Conc. (pg/L)		DL	EMPC Qualifiers]	Labeled Standard	%R	LCL-UCL	Qualifiers
Hexachlorobenzene	7.47		J	IS	13C6-Hexachlorobenzene	52.2	5 - 120	
alpha-BHC	ND	2.02		IS	13C6-alpha-BHC	75.1	32 - 130	
Lindane (gamma-BHC)	ND	3.00		IS	13C6-Lindane (gamma-BHC)	79.5	11 - 120	
beta-BHC	ND	2.78		IS	13C6-beta-BHC	85.2	32 - 130	
delta-BHC	ND	2.33		IS	13C6-delta-BHC	87.3	36 - 137	
Heptachlor	ND	1.20		IS	13C10-Heptachlor	81.3	5 - 120	
Aldrin	ND	1.41		IS	13C12-Aldrin	75.3	5 - 120	
Oxychlordane	ND	5.91		IS	13C10-Oxychlordane	86.9	23 - 135	
cis-Heptachlor Epoxide	ND	4.61		IS	13C10-cis-Heptachlor Epoxide	85.2	27 - 137	
trans-Heptachlor Epoxide	ND	14.0		IS	13C10-trans-Chlordane (gamma)	73.1	21 - 132	
trans-Chlordane (gamma)	ND	5.08		IS	13C10-trans-Nonachlor	74.8	14 - 136	
trans-Nonachlor	ND	5.55		IS	13C9-Endosulfan I (alpha)	70.4	15 - 148	
cis-Chlordane (alpha)	ND	5.39		IS	13C12-2,4'-DDE	78.2	47 - 160	
Endosulfan I (alpha)	ND	7.38		IS	13C12-4,4'-DDE	71.5	47 - 160	
2,4'-DDE	ND	1.43		IS	13C12-Dieldrin	66.4	40 - 151	
4,4'-DDE	ND	1.94		IS	13C12-Endrin	72.4	35 - 155	
Dieldrin	ND	1.44		IS	13C10-cis-Nonachlor	58.6	36 - 139	
Endrin	ND	3.99		IS	13C9-Endosulfan II (beta)	54.5	5 - 122	
cis-Nonachlor	ND	3.77		IS	13C12-2,4'-DDD	71.6	5 - 199	
Endosulfan II (beta)	ND	9.49		IS	13C12-2,4'-DDT	58.4	5 - 199	
2,4'-DDD	ND	2.45		IS	13C12-4,4'-DDD	59.7	5 - 120	
2,4'-DDT	ND	5.43		IS	13C12-4,4'-DDT	51.6	5 - 120	
4,4'-DDD	ND	3.12		IS	13C9-Endosulfan Sulfate	46.3	15 - 148	
4,4'-DDT	ND	7.85		IS	13C12-Methoxychlor	34.9	5 - 120	
Endosulfan Sulfate	ND	6.92		IS	13C10-Mirex	20.6	5 - 120	
4,4'-Methoxychlor	ND	9.00		IS	13C12-Endrin Aldehyde	24.9	15 - 148	
Mirex	ND	7.85		IS	13C12-Endrin Ketone	33.4	15 - 148	
Endrin Aldehyde	ND	8.78						
Endrin Ketone	ND	19.2						

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

Work Order 1803776 Page 6 of 14



Sample ID: OPR EPA Method 1699

Matrix: Aqueous QC Batch: B8L0002 Lab Sample: B8L0002-BS1

Sample Size: 1.00 L Date Extracted: 03-Dec-2018 6:10 Date Analyzed: 05-Dec-18 23:28 Column: ZB-50

Analyte	Amt Found (pg/L)	Spike Amt	%R	Limits		Labeled Standard	%R	LCL-UCL
Hexachlorobenzene	1070	1000	107	50 - 120	IS	13C6-Hexachlorobenzene	53.5	5 - 120
alpha-BHC	1030	1000	103	50 - 120	IS	13C6-alpha-BHC	78.0	17 - 141
Lindane (gamma-BHC)	1040	1000	104	50 - 120	IS	13C6-Lindane (gamma-BHC)	84.0	5 - 124
beta-BHC	999	1000	99.9	50 - 120	IS	13C6-beta-BHC	90.4	17 - 141
delta-BHC	991	1000	99.1	50 - 120	IS	13C6-delta-BHC	88.8	16 - 150
Heptachlor	930	1000	93.0	50 - 120	IS	13C10-Heptachlor	89.8	5 - 128
Aldrin	954	1000	95.4	50 - 120	IS	13C12-Aldrin	85.0	5 - 126
Oxychlordane	985	1000	98.5	50 - 120	IS	13C10-Oxychlordane	93.5	5 - 144
cis-Heptachlor Epoxide	940	1000	94.0	50 - 120	IS	13C10-cis-Heptachlor Epoxide	94.1	8 - 146
trans-Heptachlor Epoxide	900	1000	90.0	50 - 120	IS	13C10-trans-Chlordane (gamma)	86.5	15 - 144
trans-Chlordane (gamma)	983	1000	98.3	50 - 120	IS	13C10-trans-Nonachlor	87.7	13 - 149
trans-Nonachlor	993	1000	99.3	50 - 120	IS	13C9-Endosulfan I (alpha)	87.2	5 - 144
cis-Chlordane (alpha)	1060	1000	106	50 - 120	IS	13C12-2,4'-DDE	93.9	26 - 169
Endosulfan I (alpha)	994	1000	99.4	50 - 120	IS	13C12-4,4'-DDE	87.6	26 - 169
2,4'-DDE	1010	1000	101	24 - 123	IS	13C12-Dieldrin	83.8	19 - 161
4,4'-DDE	1020	1000	102	50 - 120	IS	13C12-Endrin	97.0	20 - 157
Dieldrin	940	1000	94.0	50 - 120	IS	13C10-cis-Nonachlor	78.1	17 - 154
Endrin	933	1000	93.3	50 - 120	IS	13C9-Endosulfan II (beta)	70.2	5 - 120
cis-Nonachlor	980	1000	98.0	50 - 120	IS	13C12-2,4'-DDD	88.1	14 - 200
Endosulfan II (beta)	973	1000	97.3	5 - 200	IS	13C12-2,4'-DDT	80.8	14 - 200
2,4'-DDD	1040	1000	104	50 - 120	IS	13C12-4,4'-DDD	82.5	14 - 200
2,4'-DDT	1160	1000	116	50 - 120	IS	13C12-4,4'-DDT	86.6	13 - 200
4,4'-DDD	1060	1000	106	42 - 120	IS	13C9-Endosulfan Sulfate	75.1	5 - 144
4,4'-DDT	1060	1000	106	50 - 120	IS	13C12-Methoxychlor	85.8	8 - 200
Endosulfan Sulfate	860	1000	86.0	50 - 120	IS	13C10-Mirex	66.0	5 - 138
4,4'-Methoxychlor	1030	1000	103	50 - 120	IS	13C12-Endrin Aldehyde	30.6	5 - 144
Mirex	1050	1000	105	50 - 120	IS	13C12-Endrin Ketone	68.8	5 - 144
Endrin Aldehyde	1090	1000	109	50 - 134				
Endrin Ketone	1030	1000	103	50 - 134				

LCL-UCL - Lower control limit - upper control limit

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Sample ID: TS2-E	C-181127							EPA Met	thod 1699
Client Data		Sample Data		Labo	oratory	Data			
Name: CDIM	Engineering	Matrix:	Water	Lab Sample: 1803776-01 Date Receive					18 8:10
Project: 101-00	3-LRTC, Task 1	Sample Size:	1.03 L	QC	Batch:	B8L0002	Date Extracted:	03-Dec-201	8 6:10
Date Collected: 27-Nov	v-2018 16:36			Da	te Analy	yzed: 06-Dec-18 03:32 Column	n: ZB-50		
Analyte Conc.	(pg/L) DL	EMPC	Oug	lifiers	1	Labeled Standard	%R	LCL-UCL	Qualifiers
Hexachlorobenzene	12.6	EMIC		В	IS	13C6-Hexachlorobenzene	60.1	5 - 120	Quanners
alpha-BHC	43.0		3,	D	IS	13C6-alpha-BHC	74.8	32 - 130	
Lindane (gamma-BHC)	30.3			J	IS	13C6-Lindane (gamma-BHC)	81.8	11 - 120	
beta-BHC	40.3		•	,	IS	13C6-beta-BHC	89.3	32 - 130	
delta-BHC	ND 2.03	5			IS	13C6-delta-BHC	89.2	36 - 137	
Heptachlor	ND 2.33				IS	13C10-Heptachlor	84.6	5 - 120	
Aldrin	ND 3.30				IS	13C12-Aldrin	71.2	5 - 120	
Oxychlordane	ND 13				IS	13C10-Oxychlordane	89.0	23 - 135	
cis-Heptachlor Epoxide	ND	52.0			IS	13C10-cis-Heptachlor Epoxide	91.0	27 - 137	
trans-Heptachlor Epoxide	ND 29.5				IS	13C10-trans-Chlordane (gamma	75.9	21 - 132	
trans-Chlordane (gamma)	34.1			J	IS	13C10-trans-Nonachlor	76.8	14 - 136	
trans-Nonachlor	ND 11.9)			IS	13C9-Endosulfan I (alpha)	73.4	15 - 148	
cis-Chlordane (alpha)	65.1				IS	13C12-2,4'-DDE	80.4	47 - 160	
Endosulfan I (alpha)	ND 15.0)			IS	13C12-4,4'-DDE	73.2	47 - 160	
2,4'-DDE	ND 1.20	5			IS	13C12-Dieldrin	69.5	40 - 151	
4,4'-DDE	52.8				IS	13C12-Endrin	95.7	35 - 155	
Dieldrin	787				IS	13C10-cis-Nonachlor	64.4	36 - 139	
Endrin	271				IS	13C9-Endosulfan II (beta)	60.3	5 - 122	
cis-Nonachlor	ND 7.19)			IS	13C12-2,4'-DDD	76.1	5 - 199	
Endosulfan II (beta)	ND 24.0)			IS	13C12-2,4'-DDT	67.7	5 - 199	
2,4'-DDD	54.7				IS	13C12-4,4'-DDD	66.7	5 - 120	
2,4'-DDT	13.5		•	J	IS	13C12-4,4'-DDT	63.1	5 - 120	
4,4'-DDD	71.7				IS	13C9-Endosulfan Sulfate	54.2	15 - 148	
4,4'-DDT	70.1				IS	13C12-Methoxychlor	49.2	5 - 120	
Endosulfan Sulfate	ND 10.	7			IS	13C10-Mirex	31.4	5 - 120	
4,4'-Methoxychlor	ND 6.7:	5			IS	13C12-Endrin Aldehyde	25.4	15 - 148	
Mirex	ND 5.25	5			IS	13C12-Endrin Ketone	42.7	15 - 148	
Endrin Aldehyde	50.5			J					
Endrin Ketone	495								

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

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DATA QUALIFIERS & ABBREVIATIONS

B This compound was also detected in the method blank

Conc. Concentration

D Dilution

DL Detection limit

E The associated compound concentration exceeded the calibration range of

the instrument

H Recovery and/or RPD was outside laboratory acceptance limits

I Chemical Interference

J The amount detected is below the Reporting Limit/LOQ

LOD Limits of Detection

LOQ Limits of Quantitation

M Estimated Maximum Possible Concentration (CA Region 2 projects only)

NA Not applicable

ND Not Detected

Q Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)

TEQ Toxic Equivalency

U Not Detected (specific projects only)

* See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

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Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	18-008-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207718
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-009
Pennsylvania Department of Environmental Protection	015
Texas Commission on Environmental Quality	T104704189-18-9
Virginia Department of General Services	9618
Washington Department of Ecology	C584-18
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

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NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA 23
Dibenzofurans	
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA TO-9A
Dibenzofurans	

MATRIX: Biological Tissue								
Description of Test	Method							
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B							
Dilution GC/HRMS								
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A							
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue	EPA 1668A/C							
by GC/HRMS								
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by	EPA 1699							
HRGC/HRMS								
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537							
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by	EPA 8280A/B							
GC/HRMS								
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA							
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A							

MATRIX: Drinking Water								
Description of Test	Method							
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA							
	1613/1613B							
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522							
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537							
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009							

MATRIX: Non-Potable Water								
Description of Test	Method							
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B							
Dilution GC/HRMS								
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A							
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue	EPA 1668A/C							
by GC/HRMS								
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699							
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537							
Dioxin by GC/HRMS	EPA 613							
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated	EPA 8280A/B							
Dibenzofurans by GC/HRMS								
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA							
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A							

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated	EPA 8280A/B
Dibenzofurans by GC/HRMS	
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A

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CHAIN OF CUSTODY RECORD

1803776 1.4°C

																	1 0	_ , , _	
LABORATORY: INSTRUCTIONS FOR LAB PERSONNEL:						Analysis Turnaroud Time X Standard <u>Other</u>												1 7	
(916) 673-15	eld Way, El Dorado Hills CA 95762 520	Please send analytic the original chain-of- bas@cdimengineering	custody form	LOCUS EDD required? Yes X No Not Report Results to: RL X MDL Call										Specify analytic/prep method and detection limit in rep Notify us of any anomalous peaks in GC or other scar Call immediately with any questions or problems.					
Karen Volpendesta sab@cdimengineering.com CDIM CONTACT: Project Manager: Bryan Starks						1	Report soil	result	s to:		weight (□ dry v		t				
CDIM Engin		Project Manager:	Bryan Stark			ANALYSIS REQUESTED												COC Nu	mber:
4 - 0 1 1-5		Phone Number	415-498-05	35		1													
	et, 3rd Floor	Sampled by:				1		1				1	1		i	1 +	1	1	1
	co, California 94102	Sample date(s):						1	1		İ			1				Page	of
PROJECT	NFORMATION								1				1				1		
Job Name:	LRTC 2018-2019 Industrial Stormwater					(6691)												SDG nu	mber:
Job#:	101-003, Task 1					PA													
						E													
Address:	402 Wright Avenue, Richmond CA 94804					ide			1			1							
Lab ID	Sample Identification	Sample Date	Sample Time	Sample Matrix	# of Cont.	Pesticides (EPA 1699)												Sample Spec	cific Notes:
	TS2-E- 181127	11/27/18	1630	w	3	Х											3 5		
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			***************************************	Field Filte	ered (X):														
Preserv	ation Used: 1= Ice, 2= HCl; 3= H ₂ SO ₄ ; 4=	HNO ₃ ; 5=NaOH; 6= Oth	er	1,000,011		1													
Special Ins	tructions/QC Requirements & Con	ments: Level II Re	port Repo	rt with ren	orting lim	it and	method	dete	ction	limit /	Analyz	o and r	enort	only the	mota	le lieted	ahovo		
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Relinquished	DE SENTINGE	Compositi	1	1	/ ()	V	IM P	WIL		-1	9		0	1	JAC			11 29 18	0810
veiii iquisiieu		Company:		Date/Time:		Recei	ved by:						0	Company	r:			Date/Time:	
Relinquished I		Company:		Date/Time:		Recei	ved by:		-				-	Company	r:			Date/Time:	
		נו											0					Date Time.	
	x = Samples released to a secured, loc	ked area.				******	9 = 5	Sample	s recei	ved fron	n a secu	red, lock	ed area						
	SAMPLERS NAME	your Stewh)						MOBIL	.E#		80	558	56 9	230	k			
	SAMPLERS SIGNATURE	gen !	1						DATE	/ TIME		11/	231	18	/18	26			
	Work Order 1803776	101									-			1				Page 13 of 1	4
		A CONTRACTOR OF THE PARTY OF TH												100					



Sample Log-In Checklist

Vista Work Orde	r#:	18	03	77	6	Page # TAT Std	_ of
Samples Arrival:	Date/Tim		D	Initials:		Location: W2- Shelf/Rack: N	4
Logged In:	Date/Tim	e 8 09	13	Initials:	e	Location: W2-2 Shelf/Rack: A2B2	
Delivered By:	FedEx	UPS	On Tra	c GSO	DH	L Hand Delivered	Other
Preservation:	lc	e	Blu	e-Ice		Dry Ice	None
Temp °C: 1.4 (corrected) Probe used: Y / N Thermometer ID: TP-4): IR-4		

		YES,	NO	NA
Adequate Sample Volume	Received?	/		
Holding Time Acceptable?		/		
Shipping Container(s) Inta	ot?	~	1	
Shipping Custody Seals In	tact?	1		
Shipping Documentation P	resent?	1		
Airbill Trk	# 7840 4099 5055	1		
Sample Container Intact?		/		
Sample Custody Seals Inta	act?			/
Chain of Custody / Sample	Documentation Present?	1		
COC Anomaly/Sample Acc	eptance Form completed?			/
If Chlorinated or Drinking V	Vater Samples, Acceptable Preservation?			V
Preservation Documented:	No.S.O. Trizmo None	Yes	No	NA
Shipping Container	Vista Client Retain F	Return	Disp	ose

Comments:

ID.: LR - SLC

Rev No.: 3

Rev Date: 05 October 2018

Page: 1 of 1



December 14, 2018

Vista Work Order No. 1803777

Mr. Scott Bourne CDIM Engineering 45 Polk Street, 3rd Floor San Francisco, CA 94102

Dear Mr. Bourne,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on November 29, 2018 under your Project Name '101-003-LRTC, Task 1'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 ph; 916-673-1520 fx; 916-673-0106 www.vista-analytical.com

Work Order 1803777 Page 1 of 15

Vista Work Order No. 1803777 Case Narrative

Sample Condition on Receipt:

One water sample was received in good condition and within the method temperature requirements. The sample was received and stored securely in accordance with Vista standard operating procedures and EPA methodology. The client was notified of the receipt of a broken container. The client authorized the laboratory to proceed with the analysis on November 29, 2018.

Analytical Notes:

EPA Method 1699

The sample was extracted and analyzed for chlorinated pesticides by EPA Method 1699 using a ZB-50 GC column.

Holding Times

The sample was extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected above the sample quantitation limits in the Method Blank. The OPR recoveries were within the method acceptance criteria.

Labeled standard recoveries for all QC and field samples were within method acceptance criteria.

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Case Narrative	1
Table of Contents	3
Sample Inventory	4
Analytical Results	5
Qualifiers	9
Certifications	10
Sample Receipt	13

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Sample Inventory Report

	Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1	1803777-01	TS2-I-181127	27-Nov-18 16:36	29-Nov-18 08:10	Amber Glass NM Bottle, 1L
					Amber Glass NM Bottle, 1L
					Amber Glass NM Bottle, 1L

Vista Project: 1803777 Client Project: 101-003-LRTC, Task 1

Work Order 1803777 Page 4 of 15

ANALYTICAL RESULTS

Work Order 1803777 Page 5 of 15

Sample ID: Method Blank EPA Method 1699

Matrix: Aqueous QC Batch: B8L0002 Lab Sample: B8L0002-BLK1

Sample Size: 1.00 L Date Extracted: 03-Dec-2018 6:10 Date Analyzed: 06-Dec-18 02:43 Column: ZB-50

Analyte Con	nc. (pg/L)	DL	EMPC Qualifiers]	Labeled Standard	%R	LCL-UCL	Qualifiers
Hexachlorobenzene	7.47		J	IS	13C6-Hexachlorobenzene	52.2	5 - 120	
alpha-BHC	ND	2.02		IS	13C6-alpha-BHC	75.1	32 - 130	
Lindane (gamma-BHC)	ND	3.00		IS	13C6-Lindane (gamma-BHC)	79.5	11 - 120	
beta-BHC	ND	2.78		IS	13C6-beta-BHC	85.2	32 - 130	
delta-BHC	ND	2.33		IS	13C6-delta-BHC	87.3	36 - 137	
Heptachlor	ND	1.20		IS	13C10-Heptachlor	81.3	5 - 120	
Aldrin	ND	1.41		IS	13C12-Aldrin	75.3	5 - 120	
Oxychlordane	ND	5.91		IS	13C10-Oxychlordane	86.9	23 - 135	
cis-Heptachlor Epoxide	ND	4.61		IS	13C10-cis-Heptachlor Epoxide	85.2	27 - 137	
trans-Heptachlor Epoxide	ND	14.0		IS	13C10-trans-Chlordane (gamma)	73.1	21 - 132	
trans-Chlordane (gamma)	ND	5.08		IS	13C10-trans-Nonachlor	74.8	14 - 136	
trans-Nonachlor	ND	5.55		IS	13C9-Endosulfan I (alpha)	70.4	15 - 148	
cis-Chlordane (alpha)	ND	5.39		IS	13C12-2,4'-DDE	78.2	47 - 160	
Endosulfan I (alpha)	ND	7.38		IS	13C12-4,4'-DDE	71.5	47 - 160	
2,4'-DDE	ND	1.43		IS	13C12-Dieldrin	66.4	40 - 151	
4,4'-DDE	ND	1.94		IS	13C12-Endrin	72.4	35 - 155	
Dieldrin	ND	1.44		IS	13C10-cis-Nonachlor	58.6	36 - 139	
Endrin	ND	3.99		IS	13C9-Endosulfan II (beta)	54.5	5 - 122	
cis-Nonachlor	ND	3.77		IS	13C12-2,4'-DDD	71.6	5 - 199	
Endosulfan II (beta)	ND	9.49		IS	13C12-2,4'-DDT	58.4	5 - 199	
2,4'-DDD	ND	2.45		IS	13C12-4,4'-DDD	59.7	5 - 120	
2,4'-DDT	ND	5.43		IS	13C12-4,4'-DDT	51.6	5 - 120	
4,4'-DDD	ND	3.12		IS	13C9-Endosulfan Sulfate	46.3	15 - 148	
4,4'-DDT	ND	7.85		IS	13C12-Methoxychlor	34.9	5 - 120	
Endosulfan Sulfate	ND	6.92		IS	13C10-Mirex	20.6	5 - 120	
4,4'-Methoxychlor	ND	9.00		IS	13C12-Endrin Aldehyde	24.9	15 - 148	
Mirex	ND	7.85		IS	13C12-Endrin Ketone	33.4	15 - 148	
Endrin Aldehyde	ND	8.78						
Endrin Ketone	ND	19.2						

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

Work Order 1803777



Sample ID: OPR EPA Method 1699

Matrix: Aqueous QC Batch: B8L0002 Lab Sample: B8L0002-BS1

Sample Size: 1.00 L Date Extracted: 03-Dec-2018 6:10 Date Analyzed: 05-Dec-18 23:28 Column: ZB-50

Analyte	Amt Found (pg/L)	Spike Amt	%R	Limits		Labeled Standard	%R	LCL-UCL
Hexachlorobenzene	1070	1000	107	50 - 120	IS	13C6-Hexachlorobenzene	53.5	5 - 120
alpha-BHC	1030	1000	103	50 - 120	IS	13C6-alpha-BHC	78.0	17 - 141
Lindane (gamma-BHC)	1040	1000	104	50 - 120	IS	13C6-Lindane (gamma-BHC)	84.0	5 - 124
beta-BHC	999	1000	99.9	50 - 120	IS	13C6-beta-BHC	90.4	17 - 141
delta-BHC	991	1000	99.1	50 - 120	IS	13C6-delta-BHC	88.8	16 - 150
Heptachlor	930	1000	93.0	50 - 120	IS	13C10-Heptachlor	89.8	5 - 128
Aldrin	954	1000	95.4	50 - 120	IS	13C12-Aldrin	85.0	5 - 126
Oxychlordane	985	1000	98.5	50 - 120	IS	13C10-Oxychlordane	93.5	5 - 144
cis-Heptachlor Epoxide	940	1000	94.0	50 - 120	IS	13C10-cis-Heptachlor Epoxide	94.1	8 - 146
trans-Heptachlor Epoxide	900	1000	90.0	50 - 120	IS	13C10-trans-Chlordane (gamma)	86.5	15 - 144
trans-Chlordane (gamma)	983	1000	98.3	50 - 120	IS	13C10-trans-Nonachlor	87.7	13 - 149
trans-Nonachlor	993	1000	99.3	50 - 120	IS	13C9-Endosulfan I (alpha)	87.2	5 - 144
eis-Chlordane (alpha)	1060	1000	106	50 - 120	IS	13C12-2,4'-DDE	93.9	26 - 169
Endosulfan I (alpha)	994	1000	99.4	50 - 120	IS	13C12-4,4'-DDE	87.6	26 - 169
2,4'-DDE	1010	1000	101	24 - 123	IS	13C12-Dieldrin	83.8	19 - 161
4,4'-DDE	1020	1000	102	50 - 120	IS	13C12-Endrin	97.0	20 - 157
Dieldrin	940	1000	94.0	50 - 120	IS	13C10-cis-Nonachlor	78.1	17 - 154
Endrin	933	1000	93.3	50 - 120	IS	13C9-Endosulfan II (beta)	70.2	5 - 120
cis-Nonachlor	980	1000	98.0	50 - 120	IS	13C12-2,4'-DDD	88.1	14 - 200
Endosulfan II (beta)	973	1000	97.3	5 - 200	IS	13C12-2,4'-DDT	80.8	14 - 200
2,4'-DDD	1040	1000	104	50 - 120	IS	13C12-4,4'-DDD	82.5	14 - 200
2,4'-DDT	1160	1000	116	50 - 120	IS	13C12-4,4'-DDT	86.6	13 - 200
4,4'-DDD	1060	1000	106	42 - 120	IS	13C9-Endosulfan Sulfate	75.1	5 - 144
4,4'-DDT	1060	1000	106	50 - 120	IS	13C12-Methoxychlor	85.8	8 - 200
Endosulfan Sulfate	860	1000	86.0	50 - 120	IS	13C10-Mirex	66.0	5 - 138
4,4'-Methoxychlor	1030	1000	103	50 - 120	IS	13C12-Endrin Aldehyde	30.6	5 - 144
Mirex	1050	1000	105	50 - 120	IS	13C12-Endrin Ketone	68.8	5 - 144
Endrin Aldehyde	1090	1000	109	50 - 134				
Endrin Ketone	1030	1000	103	50 - 134				

LCL-UCL - Lower control limit - upper control limit

Work Order 1803777

Sample ID: TS2-I	-181127						EPA Met	hod 1699
Project: 101-00	Engineering 03-LRTC, Task 1 v-2018 16:36	Sample Data Matrix: Water Sample Size: 1.04 L	Lab QC	Sample Batch: e Analy	2: 1803777-01 B8L0002	Date Received: Date Extracted: n: ZB-50	29-Nov-201 03-Dec-201	
Analyte Conc.	(pg/L) DI	EMPC	Qualifiers		Labeled Standard	%R	LCL-UCL	Qualifiers
Hexachlorobenzene	48.4		В	IS	13C6-Hexachlorobenzene	65.4	5 - 120	
alpha-BHC	20.5		J	IS	13C6-alpha-BHC	80.4	32 - 130	
Lindane (gamma-BHC)	13.3		J	IS	13C6-Lindane (gamma-BHC)	86.3	11 - 120	
beta-BHC	67.9			IS	13C6-beta-BHC	90.3	32 - 130	
delta-BHC	5.93		J	IS	13C6-delta-BHC	88.9	36 - 137	
Heptachlor	ND 3.4	3		IS	13C10-Heptachlor	86.8	5 - 120	
Aldrin	17.2		J	IS	13C12-Aldrin	72.0	5 - 120	
Oxychlordane	30.4		J	IS	13C10-Oxychlordane	89.0	23 - 135	
cis-Heptachlor Epoxide	285			IS	13C10-cis-Heptachlor Epoxide	90.7	27 - 137	
trans-Heptachlor Epoxide	ND 45.			IS	13C10-trans-Chlordane (gamma	75.4	21 - 132	
trans-Chlordane (gamma)	631			IS	13C10-trans-Nonachlor	63.5	14 - 136	
trans-Nonachlor	426			IS	13C9-Endosulfan I (alpha)	61.1	15 - 148	
cis-Chlordane (alpha)	1800			IS	13C12-2,4'-DDE	70.7	47 - 160	
Endosulfan I (alpha)	ND 30.3	3		IS	13C12-4,4'-DDE	60.7	47 - 160	
2,4'-DDE	44.7			IS	13C12-Dieldrin	60.7	40 - 151	
4,4'-DDE	985			IS	13C12-Endrin	78.4	35 - 155	
Dieldrin	3370			IS	13C10-cis-Nonachlor	47.0	36 - 139	
Endrin	482			IS	13C9-Endosulfan II (beta)	37.8	5 - 122	
cis-Nonachlor	79.0			IS	13C12-2,4'-DDD	59.1	5 - 199	
Endosulfan II (beta)	ND 112			IS	13C12-2,4'-DDT	45.2	5 - 199	
2,4'-DDD	1200			IS	13C12-4,4'-DDD	44.3	5 - 120	
2,4'-DDT	356			IS	13C12-4,4'-DDT	33.0	5 - 120	
4,4'-DDD	2260			IS	13C9-Endosulfan Sulfate	32.2	15 - 148	
4,4'-DDT	1670			IS	13C12-Methoxychlor	21.4	5 - 120	
Endosulfan Sulfate	ND 25.8	3		IS	13C10-Mirex	16.5	5 - 120	
4,4'-Methoxychlor	ND 213			IS	13C12-Endrin Aldehyde	20.1	15 - 148	
Mirex	ND 11.4	Į.		IS	13C12-Endrin Ketone	20.1	15 - 148	
Endrin Aldehyde	69.0		J					
Endrin Ketone	718							

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

Work Order 1803777

DATA QUALIFIERS & ABBREVIATIONS

B This compound was also detected in the method blank

Conc. Concentration

D Dilution

DL Detection limit

E The associated compound concentration exceeded the calibration range of

the instrument

H Recovery and/or RPD was outside laboratory acceptance limits

I Chemical Interference

J The amount detected is below the Reporting Limit/LOQ

LOD Limits of Detection

LOQ Limits of Quantitation

M Estimated Maximum Possible Concentration (CA Region 2 projects only)

NA Not applicable

ND Not Detected

Q Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)

TEQ Toxic Equivalency

U Not Detected (specific projects only)

* See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

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Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	18-008-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207718
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-009
Pennsylvania Department of Environmental Protection	015
Texas Commission on Environmental Quality	T104704189-18-9
Virginia Department of General Services	9618
Washington Department of Ecology	C584-18
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

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NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA 23
Dibenzofurans	
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA TO-9A
Dibenzofurans	

MATRIX: Biological Tissue				
Description of Test	Method			
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B			
Dilution GC/HRMS				
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A			
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue	EPA 1668A/C			
by GC/HRMS				
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by	EPA 1699			
HRGC/HRMS				
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537			
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by	EPA 8280A/B			
GC/HRMS				
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA			
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A			

MATRIX: Drinking Water				
Description of Test	Method			
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA			
	1613/1613B			
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522			
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537			
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009			

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B
Dilution GC/HRMS	
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue	EPA 1668A/C
by GC/HRMS	
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated	EPA 8280A/B
Dibenzofurans by GC/HRMS	
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated	EPA 8280A/B
Dibenzofurans by GC/HRMS	
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A

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CHAIN OF CUSTODY RECORD

180377	7
1803776	1.400
KE 41/29/18	

LABORATO	DRY:	INSTRUCTIONS FO	R I AR PER	SONNEL:		_	Analysis Turr	naroud Tir	me XS	tandard	D Other			(KE !	12/10	1.400
Vista Analytical Please send analytic results, electronic deliverables the original chain-of-custody form to: (916) 673-1520 Karen Volpendesta Please send analytic results, electronic deliverables the original chain-of-custody form to: bas@cdimengineering.com, mec@cdimengineering.com sab@cdimengineering.com				and GeoTracker EDF required? Yes X No LOCUS EDD required? Yes X No					ight	Specify analytic/prep method and detection limit in repr Notify us of any anomalous peaks in GC or other scan Call immediately with any questions or problems.						
	eering eet, 3rd Floor	Project Manager: Phone Number Sampled by:	Bryan Stark 415-498-05							IALYSIS RE					COC N	
	co, California 94102 NFORMATION	Sample date(s):						T							Page	of
Job Name: Job #: Address:	LRTC 2018-2019 Industrial Stormwater 101-003, Task 1 402 Wright Avenue, Richmond CA 94804					Pesticides (EPA 1699)									SDG r	number:
Lab ID	Sample Identification	Sample Date	Sample Time	Sample Matrix	# of Cont.	estici									Sample Sp	ecific Notes:
	TS2-1-181127	11/27/18	1636	W	3	X										
			<u> </u>													
		4														
																100
				Field Filt	tered (X):											
	ation Used: 1= Ice, 2= HCI; 3= H ₂ SO ₄ ; 4=					1										
Special Ins	structions/QC Requirements & Com	ments: Level II Re	port. Repoi	rt with rep	orting lim	it an	d method d	etectio	n limit. A	nalyze an	d report or	nly the i	metals lis	ted above		
Relinquished Relinquished	Diga Jens	Company:		Date/Time:	18/18	+	iyed by:	fil	(4	0	ompany:	He		Date/Time:	0810
Relinquished											0					
rzelii iquisi1ea	****	Company:		Date/Time:		Rece	ived by:				0 Co	mpany:			Date/Time:	
	x = Samples released to a secured, loc						• = Sar	mples rec	eived from	a secured, le				*		
	SAMPLERS NAME	Buyan Stark	5					MOE	BILE#	30	08 25	6 90	2,30			
	SAMPLERS SIGNATURE	Lung	5					DAT	E/TIME	11/3		26				
											-				7.	



Sample Log-In Checklist

	11/29/18	0811	D	Initials:		Location: (Shelf/Rack			_
Logged In:	Date/Time	094	t]	Initials:	e	Location: Shelf/Rack			
Delivered By:	FedEx	UPS	On Tra	ic GSO	DHL	Hand Deliver		Oth	er
Preservation:	lce	3	Blu	ue Ice		Dry Ice		No	ne
Temp °C: .5 Temp °C: .4	(uncorrect	Pro		ed rce))	Thermomet	er ID:	IR-	4
							YES	NO	NA
Adequate Sample	e Volume Red	ceived?	KSEE	COMMENT	3		/	×	
Holding Time Acc	ceptable?						1		
Shipping Container(s) Intact?					~				
Shipping Custody	Seals Intact	?					/		
Shipping Docume							1		
Airbill	Trk#	7840	409	9 509	55		1		
Sample Containe	r Intact?# se	Æ (0	mme	nts			V	*/	
Sample Custody	Seals Intact?								/
Chain of Custody	/ Sample Do	cumenta	ation Pr	esent?			/		1
COC Anomaly/Sa	ample Accept	ance Fo	rm com	pleted? ⊀	SEE (comments	1		
If Chlorinated or I	Orinking Water	er Sampl	es, Acc	eptable Pre	eservat	ion?			1
Preservation Doc		Na₂S Other		Trizma	Non		Yes	No (NA
Shipping Contain	er	Vis	sta)	Client	Re	tain Re	turn	Disp	ose

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Chain of Custody Anomaly/Sample Acceptance Form



Client:	CDIM Engineering		Workorder Number:	1803///
Contact:	Scott Bourne		Date Received:	29-Nov-18 08:10
Email:	sab@cdimengineering.com		Documented by/date:	K. Elric 11/29/18
Phone:	(415) 498-0535		•	
authoriza	ation before proceeding with sample a		orization section. To comply	with NELAC regulations, we must receive
Thank yo	ou,			
916-673	@vista-analytical.com	to proceed with analysi		
	Complete Chain-of-Custody	Preservative	5.	Collector's Name
	-			
	Test Method Requested	Sample Identifica		Sample Type
	Analyte List Requested	Sample Collection	on Date and/or Time	Sample Location
	Other:			
The folio	owing anomalies were noted. Auth	orization is needed to p	roceed with analysis.	
	Temperature outside < 6°C Range	Samples	Affected:	
	Temperature°C	Ice Present?	Yes No Melted	
	Sample ID Discrepancy		Insufficient Sample Size	
	Sample Holding Time Missed	X	Sample Container(s) Broken	: See Comments
	Custody Seals Broken		Incorrect Container Type	
~				
Comme Received		eled TS2-I-181127, two v	were received intact and one wa	as received with volume lost due to broken
lid.	•	,		
Client	Authorization			
Cheff Z	Authorization			1. 1.0
Proceed	d with Analysis: (YES) NO	Signature and I	Date Work	3 11/29/18
Client (Comments/Instructions Per F		rks proceed	lusing
in	books cont			0
Un	$\Gamma(C)$ EOM $\Gamma(D) \sim TZ$	$1 \sim 0 \times 1$		

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ANALYTICAL REPORT

December 18, 2018

CDIM Engineering - San Francisco, CA

Sample Delivery Group: L1050450

Samples Received: 12/06/2018

Project Number: 101-003, TASK 1

Description: LRTC 2018-2019 Industrial Stormwater 402 WRIGHT AVE, RICHMOND, CA Site:

Report To: Mary Cunningham

45 Polk Street

3rd Floor

San Francisco, CA 94102

Entire Report Reviewed By:

Buar Ford

Brian Ford Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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IONWIDE.

Received date/time

AJS

DAD

 MLW

LAT

Received date/time

Received date/time

12/06/18 08:45

12/06/18 08:45

date/time

12/08/18 15:40

12/13/18 17:30

12/07/18 14:25

12/12/18 13:05

12/05/18 09:16

Collected date/time

Collected date/time

12/05/18 09:27

Collected date/time

Collected by

date/time

1

1

12/08/18 09:24

12/12/18 06:18

12/07/18 14:25

12/10/18 02:01

Collected by

Collected by

BS

BS

TS1-E-181205 L1050450-01 WW			BS	12/05/18 08:37	12/06/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1207330	1	12/08/18 09:24	12/08/18 15:40	AJS
Wet Chemistry by Method 1664A	WG1210508	1	12/12/18 06:18	12/13/18 17:30	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1207229	1	12/07/18 14:25	12/07/18 14:25	MLW
Metals (ICPMS) by Method 200.8	WG1207015	1	12/10/18 02:01	12/12/18 10:48	LAT
			Collected by	Collected date/time	Received date/time
TS2-E-181205 L1050450-02 WW			BS	12/05/18 08:58	12/06/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst

WG1207330

WG1210508

WG1207229

WG1207015

SAMPLE SUMMARY















TS3-E-181205 L1050450-03 WW

Gravimetric Analysis by Method 2540 D-2011

Wet Chemistry by Method 4500H+ B-2011

Wet Chemistry by Method 1664A

Metals (ICPMS) by Method 200.8

Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1207330	1	12/08/18 09:24	12/08/18 15:40	AJS
Wet Chemistry by Method 1664A	WG1210508	1	12/12/18 06:18	12/13/18 17:30	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1207229	1	12/07/18 14:25	12/07/18 14:25	MLW
Metals (ICPMS) by Method 200.8	WG1207015	1	12/10/18 02:01	12/12/18 13:10	LAT

TS4-E-181205 L1050450-04 WW

Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1207330	1	12/08/18 09:24	12/08/18 15:40	AJS
Wet Chemistry by Method 1664A	WG1210508	1	12/12/18 06:18	12/13/18 17:30	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1207229	1	12/07/18 14:25	12/07/18 14:25	MLW
Metals (ICPMS) by Method 200.8	WG1207015	1	12/10/18 02:01	12/12/18 13:14	LAT

Collected by	Collected date/time	Received date/time
DC	12/0E/10 00:10	12/06/10 00:45

TSX-E-181205 L1050450-05 WW			D3	12/03/16 09.16	12/00/10 00.43
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1207330	1	12/08/18 09:24	12/08/18 15:40	AJS
Wet Chemistry by Method 1664A	WG1210508	1	12/12/18 06:18	12/13/18 17:30	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1212474	1	12/18/18 11:35	12/18/18 11:35	MLW

-

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

⁴Cn

Ss

⁵Sr









Brian Ford Project Manager

Buar Ford

SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

Collected date/time: 12/05/18 08:37

L1050450

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	U		368	2630	1	12/08/2018 15:40	WG1207330

Cp

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		788	5440	1	12/13/2018 17:30	WG1210508



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Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	su			date / time	
рН	7.97	<u>T8</u>	1	12/07/2018 14:25	WG1207229



Sample Narrative:

L1050450-01 WG1207229: 7.97 at 13.7C



Gl

Metals (ICPMS) by Method 200.8

`	, ,						
	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	51.1	<u>J</u>	20.0	100	1	12/12/2018 10:48	WG1207015
Iron	U		15.0	100	1	12/12/2018 10:48	WG1207015
Lead	0.621	<u>J</u>	0.260	1.00	1	12/12/2018 10:48	WG1207015
Zinc	22.6		1.91	10.0	1	12/12/2018 10:48	WG1207015





CDIM Engineering - San Francisco, CA

SAMPLE RESULTS - 02

ONE LAB. NATIONWIDE.

Collected date/time: 12/05/18 08:58

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	430	J	378	2700	1	12/08/2018 15:40	WG1207330

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		763	5260	1	12/13/2018 17:30	WG1210508



Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	SU			date / time	
рН	7.97	T8	1	12/07/2018 14:25	WG1207229



Cn

Sample Narrative:

L1050450-02 WG1207229: 7.97 at 14.5C



Metals (ICPMS) by Method 200.8

(-	- / - /						
	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	26.1	<u>J</u>	20.0	100	1	12/12/2018 13:05	WG1207015
Copper	7.39		0.270	1.00	1	12/12/2018 13:05	WG1207015
Iron	31.0	<u>J</u>	15.0	100	1	12/12/2018 13:05	WG1207015
Lead	0.561	<u>J</u>	0.260	1.00	1	12/12/2018 13:05	WG1207015
Zinc	29.4		1.91	10.0	1	12/12/2018 13:05	WG1207015



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L1050450 12/18/18 16:55 6 of 18

SAMPLE RESULTS - 03

ONE LAB. NATIONWIDE.

Collected date/time: 12/05/18 09:16

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	U		350	2500	1	12/08/2018 15:40	WG1207330

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch	Ь
Analyte	ug/l		ug/l	ug/l		date / time		4
TPH - Oil & Grease	U		780	5380	1	12/13/2018 17:30	WG1210508	1



Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	su			date / time	
рН	7.24	<u>T8</u>	1	12/07/2018 14:25	WG1207229



Sample Narrative:

L1050450-03 WG1207229: 7.24 at 15.3C



Metals (ICPMS) by Method 200.8

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	U		20.0	100	1	12/12/2018 13:10	WG1207015
Iron	U		15.0	100	1	12/12/2018 13:10	WG1207015
Lead	1.50		0.260	1.00	1	12/12/2018 13:10	WG1207015
Zinc	40.6		1.91	10.0	1	12/12/2018 13:10	WG1207015



ΆΙ



ONE LAB. NATIONWIDE.

Collected date/time: 12/05/18 09:27

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	U		350	2500	1	12/08/2018 15:40	WG1207330

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		763	5260	1	12/13/2018 17:30	WG1210508



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Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	su			date / time	
pH	7.54	<u>T8</u>	1	12/07/2018 14:25	WG1207229



Sample Narrative:

L1050450-04 WG1207229: 7.54 at 16C



Metals (ICPMS) by Method 200.8

•	· · ·							
	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch	
Analyte	ug/l		ug/l	ug/l		date / time		
Aluminum	33.7	<u>J</u>	20.0	100	1	12/12/2018 13:14	WG1207015	
Iron	U		15.0	100	1	12/12/2018 13:14	WG1207015	
Lead	0.456	J	0.260	1.00	1	12/12/2018 13:14	WG1207015	
7inc	105		1 91	10.0	1	12/12/2018 13:14	WG1207015	





ONE LAB. NATIONWIDE.

Collected date/time: 12/05/18 09:18

L1050450

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	600	<u>J</u>	350	2500	1	12/08/2018 15:40	WG1207330



Sample Narrative:

L1050450-05 WG1207330: Duplicate analysis could not be performed due to holding time.

³Ss

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		806	5560	1	12/13/2018 17:30	WG1210508



Sample Narrative:

L1050450-05 WG1210508: Duplicate analysis not possible due to sample volume.



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Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	su			date / time	
рН	7.25	<u>T8</u>	1	12/18/2018 11:35	WG1212474



Sc

Sample Narrative:

L1050450-05 WG1212474: 7.25 at 11.9C

CDIM Engineering - San Francisco, CA

ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 D-2011

L1050450-01,02,03,04,05

Method Blank (MB)

(MB) R3366617-1 12/08	/18 15:40			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Suspended Solids	U		350	2500







L1050387-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1050387-01 12/08/18 15:40 • (DUP) R3366617-3 12/08/18 15:40

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Suspended Solids	25300	27300	1	7.60	P1	5









(OS) L1050582-01 12/08/18 15:40 • (DUP) R3366617-4 12/08/18 15:40

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Suspended Solids	6000	5400	1	10.5	<u>P1</u>	5

LCS Qualifier





Laboratory Control Sample (LCS)

(LCS) R3366617-2 12/08/18 15:40

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits
Analyte	ug/l	ug/l	%	%
Suspended Solids	773000	752000	97.3	85.0-115

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 1664A

L1050450-01,02,03,04,05

Method Blank (MB)

(MB) R3368079-1 12/13/18 17:30 MB Result MB MDL MB Qualifier Analyte



Ss

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3368079-2 12/13/18	(LCS) R3368079-2 12/13/18 17:30 • (LCSD) R3368079-3 12/13/18 17:30										
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%	
TPH - Oil & Grease	20000	14700	13300	73.5	66.5	64.0-132			10.0	18	



[†]Cn











ONE LAB. NATIONWIDE.

Wet Chemistry by Method 4500H+ B-2011

L1050450-01,02,03,04

L1050330-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1050330-01 12/07/18 14:25 • (DUP) R3366294-3 12/07/18 14:25

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	SU	SU		%		%
рН	6.45	6.39	1	0.935		1



Ss

Sample Narrative:

OS: 6.45 at 17C DUP: 6.39 at 16.7C



L1050667-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1050667-01 12/07/18 14:25 • (DUP) R3366294-4 12/07/18 14:25

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	UP RPD imits
Analyte	su	SU		%		
рН	7.43	7.50	1	0.938		

⁶Qc

GI

Sample Narrative:

OS: 7.43 at 16.2C DUP: 7.5 at 16.3C



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3366294-1 12/07/18 14:25 • (LCSD) R3366294-2 12/07/18 14:25

()		,	,	-						
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	SU	SU	Su	%	%	%			%	%
pH	10.0	9.92	9.93	99.2	99.3	99.0-101			0.101	1

Sample Narrative:

LCS: 9.92 at 19.2C LCSD: 9.93 at 19C

12 of 18

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 4500H+ B-2011

L1050450-05

L1050450-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1050450-05 12/18/18 11:35 • (DUP) R3369118-2 12/18/18 11:35

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	Su	SU		%		%
рН	7.25	7.21	1	0.553		1



Ss



OS: 7.25 at 11.9C DUP: 7.21 at 11.7C



Laboratory Control Sample (LCS)

(I CS) R3369118-1 12/18/18 11:35

(LCS) R3369118-1 12/18/18	Spike Amount	LCS Result	LCS Rec.	Rec. Limits
Analyte	SU	SU	%	%
рН	10.0	9.97	99.7	99.0-101







Sample Narrative:

LCS: 9.97 at 17.2C

ONE LAB. NATIONWIDE.

Metals (ICPMS) by Method 200.8

L1050450-01,02,03,04

Method Blank (MB)

(MB) R3367531-1 12/1	2/18 10:14
----------------------	------------

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Aluminum	U		20.0	100
Copper	U		0.270	1.00
Iron	U		15.0	100
Lead	U		0.260	1.00
Zinc	U		1.91	10.0









⁵Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3367531-2 12/12/1	CS) R3367531-2 12/12/18 10:18 • (LCSD) R3367531-3 12/12/18 10:22										
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%	
Aluminum	5000	4810	4860	96.1	97.1	85.0-115			1.01	20	
Copper	50.0	50.6	51.1	101	102	85.0-115			1.01	20	
Iron	5000	5090	5170	102	103	85.0-115			1.56	20	
Lead	50.0	49.3	49.8	98.7	99.6	85.0-115			0.980	20	
Zinc	50.0	49.3	50.3	98.7	101	85.0-115			1.94	20	











L1050344-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1050344-01 12/12/18 10:27 • (MS) R3367531-5 12/12/18 10:40 • (MSD) R3367531-6 12/12/18 10:44

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Aluminum	5000	U	4750	4820	95.0	96.4	1	70.0-130			1.40	20
Copper	50.0	82.5	128	134	91.0	102	1	70.0-130			4.30	20
Iron	5000	351	5210	5380	97.2	101	1	70.0-130			3.19	20
Lead	50.0	0.320	48.9	50.7	97.2	101	1	70.0-130			3.47	20
Zinc	50.0	501	542	550	80.3	97.2	1	70.0-130			1.55	20

L1050450-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1050450-01 12/12/18 10:48 • (MS) R3367531-7 12/12/18 10:53 • (MSD) R3367531-8 12/12/18 10:57

(03) 11030430-01 12/12/1	1 1050450-01 12/12/18 10:48 • (MS) R336/531-7 12/12/18 10:53 • (MSD) R336/531-8 12/12/18 10:57											
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Aluminum	5000	51.1	4900	4850	97.0	96.0	1	70.0-130			1.05	20
Copper	50.0	2.19	51.1	52.4	97.9	100	1	70.0-130			2.47	20
Iron	5000	U	5030	5110	101	102	1	70.0-130			1.49	20
Lead	50.0	0.621	50.3	49.6	99.4	97.9	1	70.0-130			1.55	20
Zinc	50.0	22.6	74.3	75.1	104	105	1	70.0-130			1.03	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

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J	The identification of the analyte is acceptable; the reported value is an estimate.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.









Ss













PAGE:

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ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky ^{1 6}	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















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CHAIN OF CUSTODY RECORD | INS 0450

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ABORATO	RY: cory con Road, Mt. Juliet, TN 37122	INSTRUCTION Please send the original of bas@cdimen	analytic in chain-of-co	esults, electrustody form toom, mecidico	ronic delive to:		1	GeoTr LOCU Report	acker S EDD	EDF requi	red? o	X Standa p Yes Yes X X MC yet weight	X No No L	Other	eight.	Notify us o	of any anoma	ethod and detection limit in lous peaks in GC or other s ny questions or problems	report. cans.
rian Ford	WEST CONTROL OF THE SECOND	sab@cdimen	Manager Street Street	Bryan Starks	7615			Kapor	C SPORT TO	O O O III O				UESTED				COC Number:	NEED!
		Project Man Phone Num Sampled by Sample dat	ber	415-498-053				(SM 2540D)	SGT-HEM)		Pb, Zn							Page_\ of _	<u>'</u>
ROJECT	NFORMATION					- 4	1	spi	684	g.	e,							SDG number:	
Job#:	LRTC 2018-2019 Industrial Stormwater 101-003, Task 1 402 Wright Avenue, Richmond CA 94804						(4500HB)	uspended Sol	(EPA	Al Fe.	Metals- Al, Cu, 200.8 ICP-MS)								
Address:	The state of the s	1		Sample	Sample	# of	MS) Hd	Total Sur	O18 G	PA 2	EPA 2			10				Sample Specific N	otes:
Lab ID	Sample Identification	Sample		Time	Matrix	S Cont.	X	X	X	X					340	6	121		al
	TS1-E- 1812 05	12/5/	18	837	w	5	X	X	X		х	1		128					02
100	TS2-E-180 05		100	858		5	100	1		v	^	5				+ 1		N M	03
	TS3-E- 18005			916	W		X	X	X	X	100				77	1	- 20		04
-41	TS4-E- 181205		100	927	W	5	X	X	X	Х	100		-	1.65				Perform MS/MSD using additi	onal volume
1924	TSX-E- 18/2.65	J		918	W	5	X	X	X		58			1	1		24 50	provided	
1				LA:	ST	ENTR	Y.											75R	425
	10 10 No. 201	1000	- work	Call.		Pin								-	-	1			-
	1000年5月10日	1875						12	18	1		1				1 18		THE RESERVE	307 %
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	THE RESIDENCE OF THE PERSON NAMED IN COLUMN 1				Field Fi	Itered (X):		1	E.,		- 10	9102	100	To Pro-					23
Prese	rvation Used: 1= ice, 2= HCI; 3= H ₂ SO ₄ ; 4	=HNO ₂ ; 5=NaC	OH; 6= Ot	her		ar Sir	1	1	1, 3	1,4	1,4								A 12
Special li	nstructions/QC Requirements & Co	mments: Lo	evel II R	eport. Repo	ort with re	porting lin	nit ar	nd me	ethoo	dete	ection li	mit. Ana	lyze an	d report	only th	e metals	listed abov	re.	
						RAD	SC	REE	N: <	0.5	nR/hr								oK
1		IC			Date/Time	189	_	elved							Compan	y:	48397	Date/Time:	01
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Relinquishe		Company:	7		Date/Time: Received by:							0	Compan	y:		A SECTION OF THE PERSON OF THE	1		
Relinquishe	ed by:	Company:	2-		Date/Tim	е.	Rec	oived.	Re	10	100			0		PACÉ		12/6/18 84	SUPPLE
- 5	x = Samples released to a secured, l	ocked area.		7	M			- 55	4/5	Sampl	les receive	awn a	1 T. J. C. L.	o management	Lancard Comment			LLALD AV	12/4/5
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	SAMPLERS SIGNATUR		- 4	6		-42		1			DATE!	TIME	12	15/18		6/78		ht- 15	-

Pace Analytical National Center for Testing & Innovation Cooler Receipt Form								
Client: CDI ENGSFCA	SDG#	LIS	50450					
Cooler Received/Opened On12 / 6 1/8	Temperature:	1.2	2 10 10					
Received By: Kelsey Stephenson								
Signature: 1541	を表する サンド (4) またい A							
Receipt Check List	NP	Yes	No					
COC Seal Present / Intact?		-	- 5					
COC Signed / Accurate?		WO DOWN						
Bottles arrive intact?		,						
Correct bottles used?		1	September 1					
Sufficient volume sent?		0 9	100					
If Applicable								
VOA Zero headspace?	1777							
Preservation Correct / Checked?	100							



ANALYTICAL REPORT

December 12, 2018

CDIM Engineering - San Francisco, CA

Sample Delivery Group: L1050448

Samples Received: 12/06/2018

Project Number: 101-003, TASK 1

Description: LRTC 2018-2019 Industrial Stormwater 402 WRIGHT AVE, RICHMOND, CA Site:

Report To: Mary Cunningham

45 Polk Street

3rd Floor

San Francisco, CA 94102

Entire Report Reviewed By:

Buar Ford

Brian Ford Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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Sc: Sample Chain of Custody						























			Collected by	Collected date/time	Received date/time
TS1-I-181205 L1050448-01 WW			BS	12/05/18 08:41	12/06/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1207330	1	12/08/18 09:24	12/08/18 15:40	AJS
Wet Chemistry by Method 1664A	WG1209337	1	12/11/18 19:37	12/12/18 02:10	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1207229	1	12/07/18 14:25	12/07/18 14:25	MLW
Metals (ICPMS) by Method 200.8	WG1207015	1	12/10/18 02:01	12/12/18 12:48	LAT
			Collected by	Collected date/time	Received date/time
TS2-I-181205 L1050448-02 WW			BS	12/05/18 09:01	12/06/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1207330	1	12/08/18 09:24	12/08/18 15:40	AJS
Wet Chemistry by Method 1664A	WG1209337	1	12/11/18 19:37	12/12/18 02:10	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1207229	1	12/07/18 14:25	12/07/18 14:25	MLW
Metals (ICPMS) by Method 200.8	WG1207015	1	12/10/18 02:01	12/12/18 12:52	LAT
			Collected by	Collected date/time	Received date/time
TS3-I-181205 L1050448-03 WW			BS	12/05/18 09:20	12/06/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1207330	1	12/08/18 09:24	12/08/18 15:40	AJS
Wet Chemistry by Method 1664A	WG1209337	1	12/11/18 19:37	12/12/18 02:10	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1207229	1	12/07/18 14:25	12/07/18 14:25	MLW
Metals (ICPMS) by Method 200.8	WG1207015	1	12/10/18 02:01	12/12/18 12:57	LAT
			Collected by	Collected date/time	Received date/time
TS4-I-181205 L1050448-04 WW			BS	12/05/18 09:29	12/06/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1207330	1	12/08/18 09:24	12/08/18 15:40	AJS
Wet Chemistry by Method 1664A	WG1209337	1	12/11/18 19:37	12/12/18 02:10	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1207229	1	12/07/18 14:25	12/07/18 14:25	MLW

WG1207015

SAMPLE SUMMARY



















Metals (ICPMS) by Method 200.8

12/10/18 02:01

12/12/18 13:01

LAT

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Cn

Ss









Brian Ford Project Manager

Buar Ford

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Collected date/time: 12/05/18 08:41

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	124000		3500	25000	1	12/08/2018 15:40	WG1207330



Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		806	5560	1	12/12/2018 02:10	WG1209337



Cn

Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	Su			date / time	
рН	8.10	<u>T8</u>	1	12/07/2018 14:25	WG1207229



Sample Narrative:

L1050448-01 WG1207229: 8.1 at 12.9C

СQс Gl

Metals (ICPMS) by Method 200.8

	, ,						
	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	1700		20.0	100	1	12/12/2018 12:48	WG1207015
Iron	2920		15.0	100	1	12/12/2018 12:48	WG1207015
Lead	84.7		0.260	1.00	1	12/12/2018 12:48	WG1207015
Zinc	280		1.91	10.0	1	12/12/2018 12:48	WG1207015



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CDIM Engineering - San Francisco, CA

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Collected date/time: 12/05/18 09:01

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	56000		3500	25000	1	12/08/2018 15:40	WG1207330

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		797	5490	1	12/12/2018 02:10	WG1209337



Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	su			date / time	
pH	7.87	T8	1	12/07/2018 14:25	WG1207229



Cn

Sample Narrative:



L1050448-02 WG1207229: 7.87 at 12.8C

Metals (ICPMS) by Method 200.8

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>		
Analyte	ug/l		ug/l	ug/l		date / time			
Aluminum	592		20.0	100	1	12/12/2018 12:52	WG1207015		
Copper	9.42		0.270	1.00	1	12/12/2018 12:52	WG1207015		
Iron	1160		15.0	100	1	12/12/2018 12:52	WG1207015		
Lead	9.87		0.260	1.00	1	12/12/2018 12:52	WG1207015		
Zinc	85.4		1.91	10.0	1	12/12/2018 12:52	WG1207015		







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Collected date/time: 12/05/18 09:20

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	11300		875	6250	1	12/08/2018 15:40	WG1207330

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		771	5320	1	12/12/2018 02:10	WG1209337



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Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	Su			date / time	
рН	7.55	T8	1	12/07/2018 14:25	WG1207229



Sample Narrative:

L1050448-03 WG1207229: 7.55 at 13.5C

Gl

Metals (ICPMS) by Method 200.8

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	478		20.0	100	1	12/12/2018 12:57	WG1207015
Iron	901		15.0	100	1	12/12/2018 12:57	WG1207015
Lead	31.7		0.260	1.00	1	12/12/2018 12:57	WG1207015
Zinc	73.0		1.91	10.0	1	12/12/2018 12:57	WG1207015







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Collected date/time: 12/05/18 09:29

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	17400		350	2500	1	12/08/2018 15:40	WG1207330

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		763	5260	1	12/12/2018 02:10	WG1209337



Ss

Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	SU			date / time	
рН	7.33	<u>T8</u>	1	12/07/2018 14:25	WG1207229



Sample Narrative:

L1050448-04 WG1207229: 7.33 at 13.5C

Metals (ICPMS) by Method 200.8

Gl

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	600		20.0	100	1	12/12/2018 13:01	WG1207015
Iron	1270		15.0	100	1	12/12/2018 13:01	WG1207015
Lead	15.5		0.260	1.00	1	12/12/2018 13:01	WG1207015
Zinc	196		1.91	10.0	1	12/12/2018 13:01	WG1207015



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Gravimetric Analysis by Method 2540 D-2011

L1050448-01,02,03,04

Method Blank (MB)

(MB) R3366617-1 12/08	3/18 15:40			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Suspended Solids	U		350	2500









(OS) L1050387-01 12/08/18 15:40 • (DUP) R3366617-3 12/08/18 15:40

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Suspended Solids	25300	27300	1	7.60	P1	5



[†]Cn







(OS) L1050582-01 12/08/18 15:40 • (DUP) R3366617-4 12/08/18 15:40

(00, 2.00002 02,00,	Original Result			DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Suspended Solids	6000	5400	1	10.5	<u>P1</u>	5





Laboratory Control Sample (LCS)

(LCS) R3366617-2 12/08/18 15:40

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Suspended Solids	773000	752000	97.3	85 0-115	

12/12/18 16:11

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Wet Chemistry by Method 1664A

L1050448-01,02,03,04

Method Blank (MB)

 (MB) R3367298-1
 12/12/18 O2:10

 MB Result
 MB Qualifier
 MB MDL
 MB RDL

 Analyte
 ug/l
 ug/l
 ug/l

 TPH - Oil & Grease
 U
 725
 5000



²Tc



Laborator	(Control 9	Sample /	1001	 Laboratory 	/ Control	Sample	ם ב	nlicato ((I CSD)	
Laboratory		oampie (• Laboratory		Sample	: Du	ulicate ((LCSD)	

(LCS) R3367298-2 12/12/18 02:10 • (LCSD) R3367298-3 12/12/18 02:10										
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
TPH - Oil & Grassa	20000	19300	19200	96.5	96.0	64 0-132			n 519	18













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Wet Chemistry by Method 4500H+ B-2011

L1050448-01,02,03,04

L1050330-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1050330-01 12/07/18 14:25 • (DUP) R3366294-3 12/07/18 14:25

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	SU	SU		%		%
рН	6.45	6.39	1	0.935		1



Ss

Sample Narrative:

OS: 6.45 at 17C DUP: 6.39 at 16.7C



L1050667-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1050667-01 12/07/18 14:25 • (DUP) R3366294-4 12/07/18 14:25

(03) [1030007-01 12/07/16	Original Result			DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	SU		%		%
рН	7.43	7.50	1	0.938		1



Sample Narrative:

OS: 7.43 at 16.2C DUP: 7.5 at 16.3C



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3366294-1 12/07/18 14:25 • (LCSD) R3366294-2 12/07/18 14:25

Sample Narrative:

LCS: 9.92 at 19.2C LCSD: 9.93 at 19C

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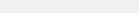
Metals (ICPMS) by Method 200.8

L1050448-01,02,03,04

Method Blank (MB)

(MB) R3367531-1	12/12/18 10:14	

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Aluminum	U		20.0	100
Copper	U		0.270	1.00
Iron	U		15.0	100
Lead	U		0.260	1.00
Zinc	U		1.91	10.0









Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3367531-2 12/12/18	3 10:18 • (LCSD)	R3367531-3 1	2/12/18 10:22								
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%	
Aluminum	5000	4810	4860	96.1	97.1	85.0-115			1.01	20	
Copper	50.0	50.6	51.1	101	102	85.0-115			1.01	20	
Iron	5000	5090	5170	102	103	85.0-115			1.56	20	
Lead	50.0	49.3	49.8	98.7	99.6	85.0-115			0.980	20	
Zinc	50.0	49.3	50.3	98.7	101	85.0-115			1.94	20	











L1050344-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1050344-01 12/12/18 10:27 • (MS) R3367531-5 12/12/18 10:40 • (MSD) R3367531-6 12/12/18 10:44

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Aluminum	5000	U	4750	4820	95.0	96.4	1	70.0-130			1.40	20
Copper	50.0	82.5	128	134	91.0	102	1	70.0-130			4.30	20
Iron	5000	351	5210	5380	97.2	101	1	70.0-130			3.19	20
Lead	50.0	0.320	48.9	50.7	97.2	101	1	70.0-130			3.47	20
Zinc	50.0	501	542	550	80.3	97.2	1	70.0-130			1.55	20

L1050450-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Aluminum	5000	51.1	4900	4850	97.0	96.0	1	70.0-130			1.05	20
Copper	50.0	2.19	51.1	52.4	97.9	100	1	70.0-130			2.47	20
Iron	5000	U	5030	5110	101	102	1	70.0-130			1.49	20
Lead	50.0	0.621	50.3	49.6	99.4	97.9	1	70.0-130			1.55	20
Zinc	50.0	22.6	74.3	75.1	104	105	1	70.0-130			1.03	20

GLOSSARY OF TERMS

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Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

	·
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.





















ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LA000356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA – ISO 17025 ⁵	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















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CDIM CONTACT: Project Manager: Bryan Starks CDIM Engineering Phone Number 415-496-0535 45 Polk Street, 3rd Floor Sampled by;				Table .			3	0			ALYSIS REQUE			TIT		COC Number;		
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	LRTC 2018-2019 Industrial Stormwater						ds (SM 2540D)	54A.S		Fe, Pb			77				10	rage of
ob#:	101-003, Task 1					4500HB)	spinos pepulati	Oit & Gresse (EPA 1664A SGT-HEM)		- Al, Cu, F ICP-MS)								SDG number:
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Lab ID	Sample Identification	Sample Date	Sample Time	Sample Matrix	# of Cont.	MS) Hd	Total S.	OHRG		EPA 2								Sample Specific Notes:
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Preserv	ation Used: 1= ice, 2= HCl; 3= H ₂ SO ₄ ; 4	=HNO ₃ ; 5=NaOH; 6= Othe	r			1	1	1, 3	1, 4	1, 4			-					4.4
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Pace Analytical National Center for Testing & Innovation Cooler Receipt Form SDG# CDIENGSFCA Client: Cooler Received/Opened On: 12/6 118 Temperature: H 020118 Received By: Kelsey Stephenson Signature: Yes No NP **Receipt Check List** COC Seal Present / Intact? COC Signed / Accurate? Bottles arrive intact? Correct bottles used? Sufficient volume sent? If Applicable VOA Zero headspace? Preservation Correct / Checked?



January 07, 2019

Vista Work Order No. 1803932

Mr. Scott Bourne CDIM Engineering 45 Polk Street, 3rd Floor San Francisco, CA 94102

Dear Mr. Bourne,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on December 06, 2018 under your Project Name 'LRTC 18-19 Industrial Stormwater 101-003 Task 1'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 ph: 916-673-1520 fx: 916-673-0106 www.vista-analytical.com

Work Order 1803932 Page 1 of 17

Vista Work Order No. 1803932 Case Narrative

Sample Condition on Receipt:

One sample was received in good condition and within the method temperature requirements. The sample was received and stored securely in accordance with Vista standard operating procedures and EPA methodology. The sample bottle labels were difficult to read. The client was notified by email, December 11, 2018. The sample was logged with the sample ID on the Chain of Custody form.

Analytical Notes:

EPA Method 1699

The sample was extracted and analyzed for chlorinated pesticides by EPA Method 1699 using a ZB-50 GC column.

Holding Times

The sample was extracted and analyzed within the method hold times. The sample was re-extracted past hold times to report only 4,4'-DDD.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with each preparation batch. No other analytes were detected above the sample quantitation limits in the Method Blanks. The OPR recoveries were within the method acceptance criteria.

The labeled standard recoveries outside the method acceptance criteria are listed in the table below:

OC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
1803932-01	TS2-E-181205	EPA Method 1699	13C12-4,4'-DDE	Н	41.0
1803932-01	TS2-E-181205	EPA Method 1699	13C12-Dieldrin	Н	37.5
1803932-01	TS2-E-181205	EPA Method 1699	13C10-cis-Nonachlor	Н	29.2

H = Recovery was outside laboratory acceptance criteria.

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Sample Inventory	4
Analytical Results	5
Qualifiers	11
Certifications	12
Sample Receipt	15

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Sample Inventory Report

Vista Sample I	Client D Sample ID	Sampled	Received	Components/Containers		
1803932-01	TS2-E-181205	05-Dec-18 08:58	06-Dec-18 07:48	Amber Glass NM Bottle, 1L		
				Amber Glass NM Bottle, 1L		
				Amber Glass NM Bottle, 1L		

Vista Project: 1803932 Client Project: LRTC 18-19 Industrial Stormwater 101-003 Task 1

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ANALYTICAL RESULTS

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Sample ID: Method Blank EPA Method 1699

Matrix: Aqueous QC Batch: B8L0069 Lab Sample: B8L0069-BLK1

Sample Size: 1.00 L Date Extracted: 10-Dec-2018 14:00 Date Analyzed: 12-Dec-18 16:09 Column: ZB-50

Analyte (Conc. (pg/L)	DL EMI	PC Qualifiers	I	Labeled Standard	%R	LCL-UCL	Qualifiers
Hexachlorobenzene	6.89		J	IS	13C6-Hexachlorobenzene	53.3	5 - 120	
alpha-BHC	ND	4.50		IS	13C6-alpha-BHC	75.5	32 - 130	
Lindane (gamma-BHC)	ND	7.65		IS	13C6-Lindane (gamma-BHC)	79.2	11 - 120	
beta-BHC	ND	6.70		IS	13C6-beta-BHC	81.9	32 - 130	
delta-BHC	ND	5.18		IS	13C6-delta-BHC	84.2	36 - 137	
Heptachlor	ND	13.4		IS	13C10-Heptachlor	78.7	5 - 120	
Aldrin	ND	5.52		IS	13C12-Aldrin	78.0	5 - 120	
Oxychlordane	ND	17.2		IS	13C10-Oxychlordane	90.3	23 - 135	
cis-Heptachlor Epoxide	ND	13.6		IS	13C10-cis-Heptachlor Epoxide	94.0	27 - 137	
trans-Heptachlor Epoxic	le ND	48.2		IS	13C10-trans-Chlordane (gamma)	87.2	21 - 132	
trans-Chlordane (gamma	a) ND	13.9		IS	13C10-trans-Nonachlor	87.9	14 - 136	
trans-Nonachlor	ND	12.8		IS	13C9-Endosulfan I (alpha)	88.0	15 - 148	
cis-Chlordane (alpha)	ND	12.9		IS	13C12-2,4'-DDE	101	47 - 160	
Endosulfan I (alpha)	ND	17.6		IS	13C12-4,4'-DDE	100	47 - 160	
2,4'-DDE	ND	2.84		IS	13C12-Dieldrin	92.1	40 - 151	
4,4'-DDE	ND	3.86		IS	13C12-Endrin	119	35 - 155	
Dieldrin	ND	1.90		IS	13C10-cis-Nonachlor	99.8	36 - 139	
Endrin	ND	3.56		IS	13C9-Endosulfan II (beta)	95.9	5 - 122	
cis-Nonachlor	ND	2.96		IS	13C12-2,4'-DDD	94.1	5 - 199	
Endosulfan II (beta)	ND	10.4		IS	13C12-2,4'-DDT	92.1	5 - 199	
2,4'-DDD	ND	4.16		IS	13C12-4,4'-DDT	105	5 - 120	
2,4'-DDT	ND	7.11		IS	13C9-Endosulfan Sulfate	105	15 - 148	
4,4'-DDT	ND	8.20		IS	13C12-Methoxychlor	116	5 - 120	
Endosulfan Sulfate	ND	16.3		IS	13C10-Mirex	116	5 - 120	
4,4'-Methoxychlor	ND	4.44		IS	13C12-Endrin Aldehyde	47.2	15 - 148	
Mirex	ND	4.28		IS	13C12-Endrin Ketone	102	15 - 148	
Endrin Aldehyde	ND	11.1						
Endrin Ketone	ND	12.2						

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

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Sample ID: OPR EPA Method 1699

Matrix: Aqueous QC Batch: B8L0069 Lab Sample: B8L0069-BS1

Sample Size: 1.00 L Date Extracted: 10-Dec-2018 14:00 Date Analyzed: 12-Dec-18 13:42 Column: ZB-50

Analyte	Amt Found (pg/L)	Spike Amt	%R	Limits		Labeled Standard	%R	LCL-UCL
Hexachlorobenzene	1020	1000	102	50 - 120	IS	13C6-Hexachlorobenzene	55.9	5 - 120
alpha-BHC	985	1000	98.5	50 - 120	IS	13C6-alpha-BHC	75.8	17 - 141
Lindane (gamma-BHC)	1000	1000	100	50 - 120	IS	13C6-Lindane (gamma-BHC)	76.5	5 - 124
beta-BHC	984	1000	98.4	50 - 120	IS	13C6-beta-BHC	79.0	17 - 141
delta-BHC	989	1000	98.9	50 - 120	IS	13C6-delta-BHC	78.5	16 - 150
Heptachlor	982	1000	98.2	50 - 120	IS	13C10-Heptachlor	68.5	5 - 128
Aldrin	1010	1000	101	50 - 120	IS	13C12-Aldrin	73.1	5 - 126
Oxychlordane	978	1000	97.8	50 - 120	IS	13C10-Oxychlordane	80.0	5 - 144
cis-Heptachlor Epoxide	946	1000	94.6	50 - 120	IS	13C10-cis-Heptachlor Epoxide	85.0	8 - 146
trans-Heptachlor Epoxide	921	1000	92.1	50 - 120	IS	13C10-trans-Chlordane (gamma)	80.0	15 - 144
trans-Chlordane (gamma)	999	1000	99.9	50 - 120	IS	13C10-trans-Nonachlor	78.5	13 - 149
trans-Nonachlor	994	1000	99.4	50 - 120	IS	13C9-Endosulfan I (alpha)	83.9	5 - 144
cis-Chlordane (alpha)	1110	1000	111	50 - 120	IS	13C12-2,4'-DDE	95.9	26 - 169
Endosulfan I (alpha)	953	1000	95.3	50 - 120	IS	13C12-4,4'-DDE	92.6	26 - 169
2,4'-DDE	987	1000	98.7	24 - 123	IS	13C12-Dieldrin	87.1	19 - 161
4,4'-DDE	1040	1000	104	50 - 120	IS	13C12-Endrin	113	20 - 157
Dieldrin	953	1000	95.3	50 - 120	IS	13C10-cis-Nonachlor	93.5	17 - 154
Endrin	915	1000	91.5	50 - 120	IS	13C9-Endosulfan II (beta)	81.2	5 - 120
cis-Nonachlor	939	1000	93.9	50 - 120	IS	13C12-2,4'-DDD	85.8	14 - 200
Endosulfan II (beta)	994	1000	99.4	5 - 200	IS	13C12-2,4'-DDT	82.5	14 - 200
2,4'-DDD	985	1000	98.5	50 - 120	IS	13C12-4,4'-DDT	95.4	13 - 200
2,4'-DDT	1070	1000	107	50 - 120	IS	13C9-Endosulfan Sulfate	95.6	5 - 144
4,4'-DDT	993	1000	99.3	50 - 120	IS	13C12-Methoxychlor	107	8 - 200
Endosulfan Sulfate	865	1000	86.5	50 - 120	IS	13C10-Mirex	114	5 - 138
4,4'-Methoxychlor	984	1000	98.4	50 - 120	IS	13C12-Endrin Aldehyde	40.7	5 - 144
Mirex	1020	1000	102	50 - 120	IS	13C12-Endrin Ketone	91.7	5 - 144
Endrin Aldehyde	902	1000	90.2	50 - 134				
Endrin Ketone	861	1000	86.1	50 - 134				

LCL-UCL - Lower control limit - upper control limit

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Sample ID	: Method Blank					EPA Met	thod 1699
Matrix: Sample Size:	Aqueous 1.00 L	QC Batch: B8L0132 Date Extracted: 16-Dec-2018 8:31		1	v132-BLK1 ec-18 03:14 Column: ZB-50		
Analyte	Conc. (pg/L)	DL EMPC	Qualifiers	Labeled Standard	%R	LCL-UCL	Qualifiers
4,4'-DDD	ND	1.96		IS 13C12-4,4'-DDD	64.3	5 - 120	

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

Work Order 1803932



Sample ID: OPR	EPA Method 1699							
Matrix: Aqueous Sample Size: 1.00 L	QC Batch: Date Extracted:	B8L0132 16-Dec-2018	8:31		Lab Sample: Date Analyzed:	B8L0132-BS1 18-Dec-18 23:10 Column: Z	ZB-50	
Analyte	Amt Found (pg/L)	Spike Amt	%R	Limits	La	beled Standard	%R	LCL-UCL
4,4'-DDD	997	1000	99.7	42 - 120	IS 130	C12-4,4'-DDD	80.1	14 - 200

LCL-UCL - Lower control limit - upper control limit

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Club Engineering Formation Club Engineering Project LRTC 8-19 Industrial Stormwater 101-1003 Table Matrix: Water Sample Size: 1.0	Sample ID: TS2	2-E-181205							EPA Met	hod 1699
Project: RELORD Project: RELORD Project: RELORD S. S. S. S. S. S. S. S.	Client Data		Sample Data		Labo	ratory	Data Data			
Daile Collected: 05-Dec-2018 8:58 Daile Amalyce Percent Process Perce	Name: CD	IM Engineering	Matrix:	Water	Lab	Samp	le: 1803932-01	Date Received:	06-Dec-201	8 7:48
	Project: LR	TC 18-19 Industrial Stormwater 101-003 Ta	Sample Size:	1.01 L	QC	Batch:	B8L0069	Date Extracted:	10-Dec-201	8 14:00
Marke Conc. (pg/L) DL EMPC Qualifiers Labeled Standard %R LCL-UCL Qualifiers Hexachlorobezene 13.3 3.120	Date Collected: 05-	Dec-2018 8:58			Dat	te Anal	yzed: 13-Dec-18 06:53 Column	n: ZB-50		
Hexachlorobenzene 13.3 J.B IS 13C6-Hexachlorobenzene 73.1 5 - 120 alpha-BHC 70.2 IS 13C6-lipha-BHC 88.3 32 - 130 IS 13C6-lipha-BHC 75.9 32 - 130 IS 13C10-Heptachlor 75.9 32							19-Dec-18 22:59 Column	n: ZB-50		
Alpha-BHC Alph	Analyte Con	nc. (pg/L) DI	EMPC	Qual	ifiers		Labeled Standard	%R		Qualifiers
Lindane (gamma-BHC) 42.7 15 13.66-Lindane (gamma-BHC) 79.2 11 - 120 120	Hexachlorobenzene	13.3		J, 1	В	IS	13C6-Hexachlorobenzene	73.1	5 - 120	
beta-BHC	alpha-BHC	70.2				IS	13C6-alpha-BHC	88.3	32 - 130	
delta-BHC ND 2.20 S 13C6-delta-BHC 73.6 36 - 137 S 13C10-Heptachlor C C C C C C C C C	Lindane (gamma-BHC)	42.7				IS	·			
Heptachlor ND	beta-BHC	55.7				IS	13C6-beta-BHC	75.9	32 - 130	
Addrin ND 5.62 IS 13C12-Addrin 60.4 5 - 120	delta-BHC					IS	13C6-delta-BHC	73.6	36 - 137	
Oxychlordane ND 24.8 IS 13C10-Oxychlordane 55.4 23 - 135 cis-Heptachlor Epoxide ND 89.7 IS 13C10-cis-Heptachlor Epoxide 66.7 27 - 137 trans-Heptachlor Epoxide ND 53.2 IS 13C10-trans-Chlordane (agmama) 46.9 21 - 132 trans-Chordane (agmama) ND 25.0 IS 13C10-trans-Nonachlor 39.9 14 - 136 trans-Nonachlor ND 26.8 IS 13C12-24-DDE 54.0 47 - 160 H Endosulfan I (alpha) ND 35.8 IS 13C12-24-DDE 54.0 47 - 160 H 2,4*DDE ND 4.17 IS 13C12-24-DDE 41.0 47 - 160 H 4,4*DDE 62.9 IS 13C12-Endrin 38.9 35 - 155 H Endrin 1080 45.4 IS 13C12-Endrin 38.9 35 - 155 Endosulfan II (beta) ND 45.4 IS 13C12-2-4*DDD 34.1 5 - 199	Heptachlor	ND 6.74	4			IS	13C10-Heptachlor	64.7		
S	Aldrin	ND 5.66	2			IS	13C12-Aldrin	60.4	5 - 120	
Trans-Heptachlor Epoxide ND 53.2 IS 13C10-trans-Chlordane (gamma) 46.9 21 - 132 13C1 13C10-trans-Chlordane (gamma) ND 25.0 IS 13C10-trans-Nonachlor 39.9 14 - 136 13C1 15 - 148 15 - 120 15 - 14	Oxychlordane	ND 24.5	8			IS		55.4	23 - 135	
trans-Chlordane (gamma) ND 25.0 IS 13C10-trans-Nonachlor 39.9 14-136 trans-Nonachlor ND 26.8 IS 13C9-Endosulfan I (alpha) 42.1 15-148 cis-Chlordane (alpha) 130 IS 13C12-2,4'-DDE 54.0 47-160 H Endosulfan I (alpha) ND 35.8 IS 13C12-2,4'-DDE 41.0 47-160 H 2,4'-DDE ND 4.17 IS 13C12-Dieldrin 37.5 40-151 H 4,4'-DDE 62.9 IS 13C12-Endrin 38.9 35-155 Dieldrin 1080 IS 13C12-Endrin 38.9 35-155 Dieldrin 294 IS 13C19-Endosulfan II (beta) 33.0 5-122 cis-Nonachlor ND 45.4 IS 13C12-2,4'-DDD 34.1 5-199 2,4'-DDD 75.3 IS 13C12-2,4'-DDD 68.4 5-120 2,4'-DDT 36.0 J IS 13C12-4,4'-DDT 17.5 5-	cis-Heptachlor Epoxide	ND	89.7			IS	13C10-cis-Heptachlor Epoxide	66.7	27 - 137	
trans-Nonachlor ND 26.8 IS 13C9-Endosulfan I (alpha) 42.1 15- 148 cis-Chlordane (alpha) 130 IS 13C12-2,4'-DDE 54.0 47- 160 Endosulfan I (alpha) ND 35.8 IS 13C12-4,4'-DDE 41.0 47- 160 H 2,4'-DDE ND 4.17 IS 13C12-Dieldrin 37.5 40- 151 H 4,4'-DDE 62.9 IS 13C12-Endrin 38.9 35- 155 ID Dieldrin 1080 IS 13C10-cis-Nonachlor 29.2 36- 139 H Endrin 294 45.4 IS 13C12-2,4'-DDD 34.1 5 - 192 Endosulfan II (beta) ND 45.4 IS 13C12-2,4'-DDD 34.1 5 - 199 Endosulfan II (beta) ND 154 IS 13C12-2,4'-DDT 19.3 5 - 199 2,4'-DDT 36.0 J IS 13C12-2,4'-DDT 17.5 5 - 120 4,4'-DDT 87.4 IS 13C12-Methox	trans-Heptachlor Epoxide	e ND 53	2			IS	13C10-trans-Chlordane (gamma) 46.9	21 - 132	
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Endosulfan I (alpha) ND 35.8 IS 13C12-4,4'-DDE 41.0 47 - 160 H 2,4'-DDE ND 4.17 IS 13C12-Dieldrin 37.5 40 - 151 H 4,4'-DDE 62.9 IS 13C12-Endrin 38.9 35 - 155 Dieldrin 1080 IS 13C10-cis-Nonachlor 29.2 36 - 139 H Endrin 294 IS 13C9-Endosulfan II (beta) 33.0 5 - 122 Cis-Nonachlor ND 45.4 IS 13C12-2,4'-DDD 34.1 5 - 199 Endosulfan II (beta) ND 154 IS 13C12-2,4'-DDT 19.3 5 - 199 E,4'-DDD 75.3 IS 13C12-4,4'-DDT 19.3 5 - 120 E,4'-DDT 36.0 J IS 13C12-4,4'-DDT 17.5 5 - 120 E,4'-DDT 87.4 IS 13C12-4,4'-DDT 17.5 5 - 120 E,4'-Methoxychlor ND 170 IS 13C12-Methoxychlor 17.5 5 - 120 E,4'-Methoxychlor ND 107 IS 13C12-Endrin Aldehyde 17.0 15 - 148 E,1'-Methoxychlor ND 55.8 IS 13C12-Endrin Ketone 17.0 15 - 148 E,1'-Methoxychlor ND 55.8 IS 13C12-Endrin Ketone 17.0 15 - 148 E,1'-Methoxychlor ND 66.6 IS 13C12-Endrin Ketone 17.0 15 - 148 E,1'-Methoxychlor ND 66.6 IS 13C12-Endrin Ketone 17.0 15 - 148 E,1'-Methoxychlor ND 66.6 IS 13C12-Endrin Ketone 17.0 15 - 148 E,1'-Methoxychlor ND 15 - 148 E,1'-Methoxychlor ND 107 IS 13C12-Endrin Ketone 17.0 15 - 148 E,1'-Methoxychlor ND 1	trans-Nonachlor	ND 26.5	8			IS	13C9-Endosulfan I (alpha)	42.1	15 - 148	
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2,4'-DDT 36.0 J IS 13C12-4,4'-DDT 17.5 5 - 120 4,4'-DDD 106 IS 13C9-Endosulfan Sulfate 30.1 15 - 148 4,4'-DDT 87.4 IS 13C12-Methoxychlor 17.5 5 - 120 Endosulfan Sulfate ND 170 IS 13C10-Mirex 13.4 5 - 120 4,4'-Methoxychlor ND 107 IS 13C12-Endrin Aldehyde 17.0 15 - 148 Mirex ND 55.8 IS 13C12-Endrin Ketone 17.0 15 - 148 Endrin Aldehyde ND 66.6	Endosulfan II (beta)	ND 154	1			IS	13C12-2,4'-DDT	19.3	5 - 199	
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4,4'-DDT 87.4 Endosulfan Sulfate ND 170 4,4'-Methoxychlor ND 107 Mirex ND 55.8 Endrin Aldehyde ND 15 - 148 Endrin Aldehyde ND 66.6	2,4'-DDT	36.0		J		IS	13C12-4,4'-DDT	17.5	5 - 120	
Endosulfan Sulfate ND 170 IS 13C10-Mirex 13.4 5 - 120 4,4'-Methoxychlor ND 107 IS 13C12-Endrin Aldehyde 17.0 15 - 148 Mirex ND 55.8 IS 13C12-Endrin Ketone 17.0 15 - 148 Endrin Aldehyde ND 66.6 17.0 15 - 148						IS				
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Mirex ND 55.8 IS 13C12-Endrin Ketone 17.0 15 - 148 Endrin Aldehyde ND 66.6	Endosulfan Sulfate					IS		13.4	5 - 120	
Endrin Aldehyde ND 66.6	-					IS		17.0	15 - 148	
		ND 55.	8			IS	13C12-Endrin Ketone	17.0	15 - 148	
Endrin Ketone 573			6							
	Endrin Ketone	573								

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

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DATA QUALIFIERS & ABBREVIATIONS

B This compound was also detected in the method blank

Conc. Concentration

D Dilution

DL Detection limit

E The associated compound concentration exceeded the calibration range of

the instrument

H Recovery and/or RPD was outside laboratory acceptance limits

I Chemical Interference

J The amount detected is below the Reporting Limit/LOQ

LOD Limits of Detection

LOQ Limits of Quantitation

M Estimated Maximum Possible Concentration (CA Region 2 projects only)

NA Not applicable

ND Not Detected

Q Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)

TEQ Toxic Equivalency

U Not Detected (specific projects only)

* See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

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Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	18-008-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207718
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-009
Pennsylvania Department of Environmental Protection	015
Texas Commission on Environmental Quality	T104704189-18-9
Virginia Department of General Services	9618
Washington Department of Ecology	C584-18
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

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NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA 23
Dibenzofurans	
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA TO-9A
Dibenzofurans	

MATRIX: Biological Tissue	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B
Dilution GC/HRMS	
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue	EPA 1668A/C
by GC/HRMS	
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by	EPA 1699
HRGC/HRMS	
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by	EPA 8280A/B
GC/HRMS	
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A

MATRIX: Drinking Water						
Description of Test	Method					
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA					
	1613/1613B					
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522					
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537					
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009					

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B
Dilution GC/HRMS	
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated	EPA 8280A/B
Dibenzofurans by GC/HRMS	
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A

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CHAIN OF CUSTODY RECORD

1803932 1.2°C

LABORAT	DRY:	INSTRUCTIONS FO	R LAB PER	SONNEL:			Analysis	Turnaro	ud Time	X Star	ndard	□ Other	000	IUL	104			_
Vista Analytical Please send analytic results, electronic deliverables a 1104 Windfield Way, El Dorado Hills CA 95762 (916) 673-1520 Karen Volpendesta Please send analytic results, electronic deliverables a the original chain-of-custody form to: bas@cdimengineering.com, mec@cdimengineering.com sab@cdimengineering.com							LOCUS EDD required? □ Yes X No No Report Results to: □ RL X MDL						Notify	Specify analytic/prep method and detection limit in repo Notify us of any anomalous peaks in GC or other scans Call immediately with any questions or problems.				
CDIM CON			. Bryan Stark	S			Reports	Oil Tesuit	S 10.	and the same of th	LYSIS RE		weight ED				COC Number:	
CDIM Engir	neering	Phone Number	415-498-05					1	T				TT	1			7,001,0011	
45 Polk Str	eet, 3rd Floor	Sampled by:								1						-		
San Francis	sco, California 94102	Sample date(s):							1 1	Į					1	Page	of	
PROJECT	NFORMATION																	
Job Name:	LRTC 2018-2019 Industrial Stormwater					(669)											SDG number:	
Job#:	101-003, Task 1					EPA				İ								
Address:	402 Wright Avenue, Richmond CA 94804					des (
Lab ID	Sample Identification	Sample Date	Sample Time	Sample Matrix	# of Cont.	Pesticides (EPA 1699)										San	ple Specific Notes	s:
	TS2-E- 181205	12/5/18	858	W	3	X							\Box					
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				Field Filt	ered (X):													
Preser	vation Used: 1= ice, 2= HCI; 3= H ₂ SO ₄ ;	4=HNO ₃ ; 5=NaOH; 6= Oth	er			1												
Special In	structions/QC Requirements & Co	mments: Level II Re	port. Repo	rt with rep	orting lim	it an	d metho	d dete	ection I	mit. An	alyze an	d repor	t only th	e metals	listed ab	ove.		
					_													
Relinguished	by: D 61 /	Company:		Date/Time:		Rede	ived by	11					Compan	v. 1 .		Date/ Jim	e)	
	by: Bryan Sterks	CDFM			,	12/6	118 074	8										
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Relinquished	by:	Company:		Date/Time:		Rece	ived by:						Compan	y:		Date/Tim	e:	_
	x = Samples released to a secured, lo	Cked area.				<u> </u>	0 :	Sample	es receiv	ed from a	secured, I	O ocked an	a					
	SAMPLERS NAME	Bryan Steak	5						MOBIL				923	230				
	SAMPLERS SIGNATUR								DATE /	TIME		5/18	170	_			,	



Sample Log-In Checklist

Vista Work Orde	-1803	131-15	12/06 304 80		Page #	SIL	of	
Samples Arrival:	Date/Time	0748	Initials:	2	ocation:	WR-		
Logged In:	Date/Time 12/06/18 143	36 Initials:		L	Location: WZ-2 Shelf/Rack: 8-2,0			
Delivered By:	FedEx UPS	On Tra	ac GSO	DHL	Han Delive		Oth	ier
Preservation:	(Ice)	Bli	ue Ice		Dry Ice		No	ne
Temp °C: 1.3		Probe us	ed: Y /N)	hermome	ter ID:	IR-	4
Temp °C: 1.2	(corrected)	11000 03			nomome	iter ib.		_1
						YES	NO	NA
Adequate Samp	le Volume Receive	d?				1		
Holding Time Ad	cceptable?					1		
	nas(a) IntantO					1		
Shipping Contai	ner(s) intact?	Shipping Custody Seals Intact?						
C. Parti. Variation								
Shipping Custoo	dy Seals Intact?					V		
Shipping Custoo	dy Seals Intact?	242 15	59139	65		V		
Shipping Custoo Shipping Docum	ly Seals Intact? nentation Present? Trk # 78	142 15	591 39	65				
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ID.: LR - SLC

Rev No.: 3

Rev Date: 05 October 2018

Page: 1 of 1

Chain of Custody Anomaly/Sample Acceptance Form



Client: **CDIM Engineering** Workorder Number: 1803932 Contact: Scott Bourne Date Received: 06-Dec-18 07:48 Email: Documented by/date: sab@cdimengineering.com MSparks/12-06-18 Phone: (415) 498-0535 Please review the following information and complete the Client Authorization section. To comply with NELAC regulations, we must receive authorization before proceeding with sample analysis. Thank you, Martha Maier mmaier@vista-analytical.com 916-673-1520 The following information or item is needed to proceed with analysis: Complete Chain-of-Custody Preservative Collector's Name Test Method Requested Sample Identification: see comments Sample Type Analyte List Requested Sample Collection Date and/or Time Sample Location Other: The following anomalies were noted. Authorization is needed to proceed with analysis. Temperature outside < 6°C Range Samples Affected: Temperature ____ Ice Present? Yes No Melted Sample ID Discrepancy Insufficient Sample Size Sample Holding Time Missed Sample Container(s) Broken Custody Seals Broken Incorrect Container Type Comments: Sample labels are illegible on bottles. **Client Authorization** Proceed with Analysis: (Signature and Date Client Comments/Instructions Chent

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January 07, 2019

Vista Work Order No. 1803930

Mr. Scott Bourne CDIM Engineering 45 Polk Street, 3rd Floor San Francisco, CA 94102

Dear Mr. Bourne,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on December 06, 2018 under your Project Name 'LRTC 18-19 Industrial Stormwater 101-003 Task 1'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 ph: 916-673-1520 fx: 916-673-0106 www.vista-analytical.com

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Vista Work Order No. 1803930 Case Narrative

Sample Condition on Receipt:

One water sample was received in good condition and within the method temperature requirements. The sample was received and stored securely in accordance with Vista standard operating procedures and EPA methodology. The sample bottle labels were difficult to read. The client was notified by email, December 11, 2018. The sample was logged with the sample ID on the Chain of Custody form.

Analytical Notes:

EPA Method 1699

The sample was extracted and analyzed for chlorinated pesticides by EPA Method 1699 using a ZB-50 GC column.

Holding Times

The sample was extracted and analyzed within the method hold times. The sample was re-extracted past hold times to report only 4,4'-DDD.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with each preparation batch. No other analytes were detected above the sample quantitation limits in the Method Blanks. The OPR recoveries were within the method acceptance criteria.

The labeled standard recoveries outside the method acceptance criteria are listed in the table below:

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
1803930-01	TS2-I-181205	EPA Method 1699	13C12-2,4'-DDE	Н	42.9
1803930-01	TS2-I-181205	EPA Method 1699	13C12-4,4'-DDE	Н	31.1
1803930-01	TS2-I-181205	EPA Method 1699	13C12-Dieldrin	Н	28.6
1803930-01	TS2-I-181205	EPA Method 1699	13C10-cis-Nonachlor	Н	20.9
1803930-01	TS2-I-181205	EPA Method 1699	13C12-Endrin Aldehyde	Н	14.6
1803930-01	TS2-I-181205	EPA Method 1699	13C12-Endrin Ketone	Н	11.7

H = Recovery was outside laboratory acceptance criteria.

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1803930-01	TS2-I-181205	05-Dec-18 09:01	06-Dec-18 07:48	Amber Glass NM Bottle, 1L
				Amber Glass NM Bottle, 1L
				Amber Glass NM Bottle, 1L

Vista Project: 1803930 Client Project: LRTC 18-19 Industrial Stormwater 101-003 Task 1

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ANALYTICAL RESULTS

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Sample ID: Method Blank EPA Method 1699

Matrix: Aqueous QC Batch: B8L0069 Lab Sample: B8L0069-BLK1

Sample Size: 1.00 L Date Extracted: 10-Dec-2018 14:00 Date Analyzed: 12-Dec-18 16:09 Column: ZB-50

Analyte	Conc. (pg/L)	DL EMPC	Qualifiers]	Labeled Standard	%R	LCL-UCL	Qualifiers
Hexachlorobenzene	6.89		J	IS	13C6-Hexachlorobenzene	53.3	5 - 120	
alpha-BHC	ND	4.50		IS	13C6-alpha-BHC	75.5	32 - 130	
Lindane (gamma-BHC)	ND	7.65		IS	13C6-Lindane (gamma-BHC)	79.2	11 - 120	
beta-BHC	ND	6.70		IS	13C6-beta-BHC	81.9	32 - 130	
delta-BHC	ND	5.18		IS	13C6-delta-BHC	84.2	36 - 137	
Heptachlor	ND	13.4		IS	13C10-Heptachlor	78.7	5 - 120	
Aldrin	ND	5.52		IS	13C12-Aldrin	78.0	5 - 120	
Oxychlordane	ND	17.2		IS	13C10-Oxychlordane	90.3	23 - 135	
cis-Heptachlor Epoxide	ND	13.6		IS	13C10-cis-Heptachlor Epoxide	94.0	27 - 137	
trans-Heptachlor Epoxi	de ND	48.2		IS	13C10-trans-Chlordane (gamma)	87.2	21 - 132	
trans-Chlordane (gamm	a) ND	13.9		IS	13C10-trans-Nonachlor	87.9	14 - 136	
trans-Nonachlor	ND	12.8		IS	13C9-Endosulfan I (alpha)	88.0	15 - 148	
cis-Chlordane (alpha)	ND	12.9		IS	13C12-2,4'-DDE	101	47 - 160	
Endosulfan I (alpha)	ND	17.6		IS	13C12-4,4'-DDE	100	47 - 160	
2,4'-DDE	ND	2.84		IS	13C12-Dieldrin	92.1	40 - 151	
4,4'-DDE	ND	3.86		IS	13C12-Endrin	119	35 - 155	
Dieldrin	ND	1.90		IS	13C10-cis-Nonachlor	99.8	36 - 139	
Endrin	ND	3.56		IS	13C9-Endosulfan II (beta)	95.9	5 - 122	
cis-Nonachlor	ND	2.96		IS	13C12-2,4'-DDD	94.1	5 - 199	
Endosulfan II (beta)	ND	10.4		IS	13C12-2,4'-DDT	92.1	5 - 199	
2,4'-DDD	ND	4.16		IS	13C12-4,4'-DDT	105	5 - 120	
2,4'-DDT	ND	7.11		IS	13C9-Endosulfan Sulfate	105	15 - 148	
4,4'-DDT	ND	8.20		IS	13C12-Methoxychlor	116	5 - 120	
Endosulfan Sulfate	ND	16.3		IS	13C10-Mirex	116	5 - 120	
4,4'-Methoxychlor	ND	4.44		IS	13C12-Endrin Aldehyde	47.2	15 - 148	
Mirex	ND	4.28		IS	13C12-Endrin Ketone	102	15 - 148	
Endrin Aldehyde	ND	11.1						
Endrin Ketone	ND	12.2						

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

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Sample ID: OPR EPA Method 1699

Matrix: Aqueous QC Batch: B8L0069 Lab Sample: B8L0069-BS1

Sample Size: 1.00 L Date Extracted: 10-Dec-2018 14:00 Date Analyzed: 12-Dec-18 13:42 Column: ZB-50

		G 11 4 4						
Analyte	Amt Found (pg/L)	Spike Amt	%R	Limits		Labeled Standard	%R	LCL-UCL
Hexachlorobenzene	1020	1000	102	50 - 120	IS	13C6-Hexachlorobenzene	55.9	5 - 120
alpha-BHC	985	1000	98.5	50 - 120	IS	13C6-alpha-BHC	75.8	17 - 141
Lindane (gamma-BHC)	1000	1000	100	50 - 120	IS	13C6-Lindane (gamma-BHC)	76.5	5 - 124
beta-BHC	984	1000	98.4	50 - 120	IS	13C6-beta-BHC	79.0	17 - 141
delta-BHC	989	1000	98.9	50 - 120	IS	13C6-delta-BHC	78.5	16 - 150
Heptachlor	982	1000	98.2	50 - 120	IS	13C10-Heptachlor	68.5	5 - 128
Aldrin	1010	1000	101	50 - 120	IS	13C12-Aldrin	73.1	5 - 126
Oxychlordane	978	1000	97.8	50 - 120	IS	13C10-Oxychlordane	80.0	5 - 144
cis-Heptachlor Epoxide	946	1000	94.6	50 - 120	IS	13C10-cis-Heptachlor Epoxide	85.0	8 - 146
trans-Heptachlor Epoxide	921	1000	92.1	50 - 120	IS	13C10-trans-Chlordane (gamma)	80.0	15 - 144
trans-Chlordane (gamma)	999	1000	99.9	50 - 120	IS	13C10-trans-Nonachlor	78.5	13 - 149
trans-Nonachlor	994	1000	99.4	50 - 120	IS	13C9-Endosulfan I (alpha)	83.9	5 - 144
cis-Chlordane (alpha)	1110	1000	111	50 - 120	IS	13C12-2,4'-DDE	95.9	26 - 169
Endosulfan I (alpha)	953	1000	95.3	50 - 120	IS	13C12-4,4'-DDE	92.6	26 - 169
2,4'-DDE	987	1000	98.7	24 - 123	IS	13C12-Dieldrin	87.1	19 - 161
4,4'-DDE	1040	1000	104	50 - 120	IS	13C12-Endrin	113	20 - 157
Dieldrin	953	1000	95.3	50 - 120	IS	13C10-cis-Nonachlor	93.5	17 - 154
Endrin	915	1000	91.5	50 - 120	IS	13C9-Endosulfan II (beta)	81.2	5 - 120
cis-Nonachlor	939	1000	93.9	50 - 120	IS	13C12-2,4'-DDD	85.8	14 - 200
Endosulfan II (beta)	994	1000	99.4	5 - 200	IS	13C12-2,4'-DDT	82.5	14 - 200
2,4'-DDD	985	1000	98.5	50 - 120	IS	13C12-4,4'-DDT	95.4	13 - 200
2,4'-DDT	1070	1000	107	50 - 120	IS	13C9-Endosulfan Sulfate	95.6	5 - 144
4,4'-DDT	993	1000	99.3	50 - 120	IS	13C12-Methoxychlor	107	8 - 200
Endosulfan Sulfate	865	1000	86.5	50 - 120	IS	13C10-Mirex	114	5 - 138
4,4'-Methoxychlor	984	1000	98.4	50 - 120	IS	13C12-Endrin Aldehyde	40.7	5 - 144
Mirex	1020	1000	102	50 - 120	IS	13C12-Endrin Ketone	91.7	5 - 144
Endrin Aldehyde	902	1000	90.2	50 - 134				
Endrin Ketone	861	1000	86.1	50 - 134				

LCL-UCL - Lower control limit - upper control limit

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Sample ID	: Method Blank					EPA Met	thod 1699
Matrix: Sample Size:	Aqueous 1.00 L	QC Batch: B8L0132 Date Extracted: 16-Dec-2018 8:31		1	0132-BLK1 ec-18 03:14 Column: ZB-50		
Analyte	Conc. (pg/L)	DL EMPC	Qualifiers	Labeled Standard	%R	LCL-UCL	Qualifiers
4,4'-DDD	ND	1.96		IS 13C12-4,4'-DDD	64.3	5 - 120	

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

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Sample ID: OPR								EPA Method 1699
Matrix: Aqueous Sample Size: 1.00 L	QC Batch: Date Extracted:	B8L0132 16-Dec-2018	8 8:31		Lab Sample: Date Analyzed:	B8L0132-BS1 18-Dec-18 23:10 Column: ZE	3-50	
Analyte	Amt Found (pg/L)	Spike Amt	%R	Limits	La	beled Standard	%R	LCL-UCL
4,4'-DDD	997	1000	99.7	42 - 120	IS 13	C12-4,4'-DDD	80.1	14 - 200

LCL-UCL - Lower control limit - upper control limit

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Sample ID: TS2-	I-181205							EPA Met	hod 1699
Client Data		Sample Data			ratory 1				
Name: CDIM	1 Engineering	Matrix:	Water	Lab	Sample	e: 1803930-01	Date Received:	06-Dec-201	8 7:48
Project: LRTC	C 18-19 Industrial Stormwater 101-003 Ta	Sample Size:	1.02 L	QC	Batch:	B8L0069	Date Extracted:	10-Dec-201	8 14:00
Date Collected: 05-De	ec-2018 9:01			Date	e Analy	zed: 13-Dec-18 06:05 Column	n: ZB-50		
				<u> </u>		19-Dec-18 22:11 Column			
Analyte Conc.	. (pg/L) DL	EMPC	Qual	ifiers		Labeled Standard	%R	LCL-UCL	Qualifiers
Hexachlorobenzene	510		В			13C6-Hexachlorobenzene	91.8	5 - 120	
alpha-BHC	82.5					13C6-alpha-BHC	100	32 - 130	
Lindane (gamma-BHC)	62.1					13C6-Lindane (gamma-BHC)	87.6	11 - 120	
beta-BHC	35.7		J		IS	13C6-beta-BHC	71.2	32 - 130	
delta-BHC	ND 4.19)			IS	13C6-delta-BHC	67.1	36 - 137	
Heptachlor	ND 7.83	}			IS	13C10-Heptachlor	79.6	5 - 120	
Aldrin	ND 8.36	5			IS	13C12-Aldrin	43.2	5 - 120	
Oxychlordane	ND 26.5	5			IS	13C10-Oxychlordane	53.9	23 - 135	
cis-Heptachlor Epoxide	ND	63.9			IS	13C10-cis-Heptachlor Epoxide	56.4	27 - 137	
trans-Heptachlor Epoxide	257				IS	13C10-trans-Chlordane (gamma) 35.2	21 - 132	
trans-Chlordane (gamma)	269				IS	13C10-trans-Nonachlor	32.3	14 - 136	
trans-Nonachlor	140				IS	13C9-Endosulfan I (alpha)	35.2	15 - 148	
cis-Chlordane (alpha)	340				IS	13C12-2,4'-DDE	42.9	47 - 160	Н
Endosulfan I (alpha)	ND 42.0)			IS	13C12-4,4'-DDE	31.1	47 - 160	Н
2,4'-DDE	173				IS	13C12-Dieldrin	28.6	40 - 151	Н
4,4'-DDE	3150				IS	13C12-Endrin	35.8	35 - 155	
Dieldrin	945				IS	13C10-cis-Nonachlor	20.9	36 - 139	Н
Endrin	308				IS	13C9-Endosulfan II (beta)	26.4	5 - 122	
cis-Nonachlor	ND 63.1				IS	13C12-2,4'-DDD	26.3	5 - 199	
Endosulfan II (beta)	ND 218				IS	13C12-2,4'-DDT	15.8	5 - 199	
2,4'-DDD	1090				IS	13C12-4,4'-DDD	30.3	5 - 120	
2,4'-DDT	1310				IS	13C12-4,4'-DDT	11.0	5 - 120	
4,4'-DDD	2070				IS	13C9-Endosulfan Sulfate	16.8	15 - 148	
4,4'-DDT	4660				IS	13C12-Methoxychlor	14.5	5 - 120	
Endosulfan Sulfate	ND 219				IS	13C10-Mirex	9.70	5 - 120	
4,4'-Methoxychlor	ND 528				IS	13C12-Endrin Aldehyde	14.6	15 - 148	Н
Mirex	ND 94.6	Ó			IS	13C12-Endrin Ketone	11.7	15 - 148	Н
Endrin Aldehyde	ND 120								
Endrin Ketone	ND 429	1							

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

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Sample ID: T	S2-I-181205								EPA Met	hod 1699
Client Data Name: C	DIM Engineering		Sample Data Matrix:	Water		boratory ab Samp		Date Received:	06-Dec-201	8 7:48
Project: L	RTC 18-19 Industrial Stormwater 10	1-003 Ta	Sample Size:	1.02 L	Q	C Batch:	B8L0069	Date Extracted:	10-Dec-201	8 14:00
Date Collected: 0	5-Dec-2018 9:01				D	ate Anal	yzed: 13-Dec-18 06:05 Column	n: ZB-50		
						_	19-Dec-18 22:11 Column	n: ZB-50		
Analyte (Conc. (pg/L)	DL	EMPC		Qualifiers	s	Labeled Standard	%R	LCL-UCL	Qualifiers
Hexachlorobenzene	510				В	IS	13C6-Hexachlorobenzene	91.8	5 - 120	
alpha-BHC	82.5					IS	13C6-alpha-BHC	100	32 - 130	
Lindane (gamma-BHC) 62.1					IS	13C6-Lindane (gamma-BHC)	87.6	11 - 120	
beta-BHC	35.7				J	IS	13C6-beta-BHC	71.2	32 - 130	
delta-BHC	ND	4.19				IS	13C6-delta-BHC	67.1	36 - 137	
Heptachlor	ND	7.83				IS	13C10-Heptachlor	79.6	5 - 120	
Aldrin	ND	8.36				IS	13C12-Aldrin	43.2	5 - 120	
Oxychlordane	ND	26.5				IS	13C10-Oxychlordane	53.9	23 - 135	
cis-Heptachlor Epoxide	e ND		63.9			IS	13C10-cis-Heptachlor Epoxide	56.4	27 - 137	
trans-Heptachlor Epox	ide 257					IS	13C10-trans-Chlordane (gamma) 35.2	21 - 132	
trans-Chlordane (gamn	na) 269					IS	13C10-trans-Nonachlor	32.3	14 - 136	
trans-Nonachlor	140					IS	13C9-Endosulfan I (alpha)	35.2	15 - 148	
cis-Chlordane (alpha)	340					IS	13C12-2,4'-DDE	42.9	47 - 160	Н
Endosulfan I (alpha)	ND	42.0				IS	13C12-4,4'-DDE	31.1	47 - 160	Н
2,4'-DDE	173					IS	13C12-Dieldrin	28.6	40 - 151	Н
4,4'-DDE	3150					IS	13C12-Endrin	35.8	35 - 155	
Dieldrin	945					IS	13C10-cis-Nonachlor	20.9	36 - 139	Н
Endrin	308					IS	13C9-Endosulfan II (beta)	26.4	5 - 122	
cis-Nonachlor	ND	63.1				IS	13C12-2,4'-DDD	26.3	5 - 199	
Endosulfan II (beta)	ND	218				IS	13C12-2,4'-DDT	15.8	5 - 199	
2,4'-DDD	1090					IS	13C12-4,4'-DDD	30.3	5 - 120	
2,4'-DDT	1310					IS	13C12-4,4'-DDT	11.0	5 - 120	
4,4'-DDD	2070					IS	13C9-Endosulfan Sulfate	16.8	15 - 148	
4,4'-DDT	4660					IS	13C12-Methoxychlor	14.5	5 - 120	
Endosulfan Sulfate	ND	219				IS	13C10-Mirex	9.70	5 - 120	
4,4'-Methoxychlor	ND	528				IS	13C12-Endrin Aldehyde	14.6	15 - 148	Н
Mirex	ND	94.6				IS	13C12-Endrin Ketone	11.7	15 - 148	Н
Endrin Aldehyde	ND	120								
Endrin Ketone	ND	429								

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

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DATA QUALIFIERS & ABBREVIATIONS

B This compound was also detected in the method blank

Conc. Concentration

D Dilution

DL Detection limit

E The associated compound concentration exceeded the calibration range of

the instrument

H Recovery and/or RPD was outside laboratory acceptance limits

I Chemical Interference

J The amount detected is below the Reporting Limit/LOQ

LOD Limits of Detection

LOQ Limits of Quantitation

M Estimated Maximum Possible Concentration (CA Region 2 projects only)

NA Not applicable

ND Not Detected

Q Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)

TEQ Toxic Equivalency

U Not Detected (specific projects only)

* See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

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Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	18-008-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207718
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-009
Pennsylvania Department of Environmental Protection	015
Texas Commission on Environmental Quality	T104704189-18-9
Virginia Department of General Services	9618
Washington Department of Ecology	C584-18
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

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NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA 23
Dibenzofurans	
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA TO-9A
Dibenzofurans	

MATRIX: Biological Tissue						
Description of Test	Method					
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B					
Dilution GC/HRMS						
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A					
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue	EPA 1668A/C					
by GC/HRMS						
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by	EPA 1699					
HRGC/HRMS						
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537					
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by	EPA 8280A/B					
GC/HRMS						
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA					
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A					

MATRIX: Drinking Water					
Description of Test	Method				
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA				
	1613/1613B				
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522				
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537				
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009				

MATRIX: Non-Potable Water					
Description of Test	Method				
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B				
Dilution GC/HRMS					
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A				
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue	EPA 1668A/C				
by GC/HRMS					
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699				
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537				
Dioxin by GC/HRMS	EPA 613				
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated	EPA 8280A/B				
Dibenzofurans by GC/HRMS					
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA				
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A				

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated	EPA 8280A/B
Dibenzofurans by GC/HRMS	
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A

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CHAIN OF CUSTODY RECORD

1803930 1.2°C

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(916) 673-1 Karen Volpe	ical eld Way, El Dorado F 520 endesta	Hills CA 95762	INSTRUCTIONS FO Please send analytic the original chain-of- bas@cdimengineering sab@cdimengineering	results, electustody form .com, mec@c	tronic delive to: cdimenginee		d	GeoT LOCU Repo	racker US EDI ort Resu	EDF red D required lits to: esults to	quired? ed? c	Yes X	ndard /es X X No MDL ght (total				Specify Notify u	- analytic/p s of any a	orep me	thod and detection ous peaks in GC or y questions or pro	or other scans.
			Project Manager: Phone Number Sampled by: Sample date(s):	Bryan Stark 415-498-05								ANA	LYSIS	REQUE	STED						lumber:
	NFORMATION		Sample date(s).				1				ļ									Page_/	of 1
Job Name: Job #: Address:	LRTC 2018-2019 Ind 101-003, Task 1 402 Wright Avenue, F						Pesticides (EPA 1699)													SDG r	iumber:
Lab ID	Sample Is	lentification	Sample Date	Sample	Sample	# of	esticic							-						Sample St	ecific Notes:
Labib	TS2-1- 18/2		17/5//8	901	Matrix W	Cont.	X							+		-					Johns Motobi
																\top					
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					Field Filt	ered (X):															
			NO ₃ ; 5=NaOH; 6= Othe		16		1														
			nents: Level II Rep	oort. Repor	t with rep	orting lim	nit an	d met	thod o	letecti	on lim	nit. Ana	alyze a	nd rep	ort onl	y the i	netals I	isted at	oove.		
Relinquished	by Byan Sta	ids	Company:		Date/Time: 12/5/18	1200	Recei	ved by	11	en	00	et	-	0		pany:	WA	1		Date/Time: 12/6/18	67110
Relinquished	by:		Company:		Date/Time:		Recei	ived by	<i>I</i> :		~				Com	pany:	V ,)			Date/Time:	0+70
Relinquished	by:		Company:		Date/Time:		Recei	ved by	r:				_	0	Com	pany:				Date/Time:	
	x = Samples releas	ed to a secured, locke	ed area.						• = Sa	mples re	eceived	from a	secured,	locked							
	SAM	PLERS NAME B	your Starks								BILE #				256 9	230	>				
	SAM	PLERS SIGNATURE	ling of	>						DA	TE / TI	ME		151		120					1



Sample Log-In Checklist

Samples Arrival:	Date/Time	748	Initials:	2	Shelf/Rack: NA				
Logged In:	Date/Time 12 06 18 414	2 11111				WR-2 :: 3-2, D-6			
Delivered By:	FedEx UPS	On Tra	c GSO	DHL	Hand Deliver		Oth	Other	
Preservation:	(Ice)	Blu	ue Ice		Dry Ice		No	ne	
Temp °C: 1.2		Probe use	ed: Y /N) -	Thermome	ter ID:	IR-	4	
						YES	NO	NA	
Adequate Samp	le Volume Received	d?				1			
Holding Time Ad	cceptable?					1			
Shipping Contai	ner(s) Intact?								
								V	
Shipping Custoo									
Shipping Docum	nentation Present?	21/2 15	013/	715		V			
Shipping Docum	nentation Present?	342 15	9139	165		V			
Shipping Docum Airbill Sample Contain	Trk # 78	342 15	19139	165				1	
Shipping Docum Airbill Sample Contain Sample Custody	Trk # 78 er Intact? y Seals Intact?			965		V V		1	
Shipping Docum Airbill Sample Contain Sample Custody Chain of Custod	Trk # 78 er Intact? / Seals Intact? / Sample Docume	entation Pr	resent?	965		V V		1	
Shipping Docum Airbill Sample Contain Sample Custody Chain of Custod COC Anomaly/S	er Intact? y Seals Intact? y Sample Docume Sample Acceptance	entation Pr Form com	resent?			V V			
Shipping Docum Airbill Sample Contain Sample Custody Chain of Custod COC Anomaly/S	rentation Present? Trk # 78 er Intact? y Seals Intact? y / Sample Docume Sample Acceptance Drinking Water Sample	entation Pr Form com mples, Acc la ₂ S ₂ O ₃	resent?		on?	V V	No	/ (N/	

ID.: LR - SLC

Rev No.: 3

Rev Date: 05 October 2018

Page: 1 of 1

Chain of Custody Anomaly/Sample Acceptance Form



Client: Contact: Email: Phone:	CDIM Engineering Scott Bourne sab@cdimengineering.com (415) 498-0535	Workorder Number: Date Received: Documented by/date:	1803930 06-Dec-18 07:48 MSparks/12-06-18
	view the following information and complete the Client Authorization before proceeding with sample analysis.	on section. To comply	with NELAC regulations, we must receive
Thank yo	u,		
Martha M mmaier@ 916-673-1	vista-analytical.com		
The follow	ing information or item is needed to proceed with analysis:		
	Complete Chain-of-Custody Preservative		Collector's Name
	Test Method Requested X Sample Identification: s		Sample Type
	Analyte List Requested Sample Collection Date Other:	e and/or Time	Sample Location
	Ouler.		
	wing anomalies were noted. Authorization is needed to proceed Temperature outside < 6°C Range Samples Affect	-	
	Temperature°C		
<u> </u>			
		fficient Sample Size ple Container(s) Broken	
		rrect Container Type	
Commen		· ·	
	abels are illegible on bottles.		
oumpre ra			
Client A	authorization	\cap	
Proceed	with Analysis: (YES) NO Signature and Date _	Upralda) 12/11/18
Client Co	with Analysis: (YES) NO Signature and Date_ omments/Instructions Client Noticed U	ia email	12/11/18

Work Order 1803930 Page 18 of 18



ANALYTICAL REPORT

January 28, 2019

CDIM Engineering - San Francisco, CA

Sample Delivery Group: L1060709 Samples Received: 01/14/2019

Project Number: 101-003, TASK 1

Description: LRTC 2018-2019 Industrial Stormwater
Site: 402 WRIGHT AVE, RICHMOND, CA

Report To: Mary Cunningham

45 Polk Street

3rd Floor

San Francisco, CA 94102

Entire Report Reviewed By:

Jared Starkey

Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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ONE LAB. NATIONWID	? Y	JMMAF	SAMPLE SU	
ted date/time Received date/time	Collected by			
9 15:55 01/14/19 09:30				TS1-E-190111 L1060709-01 WW
sis Analyst	Preparation	Dilution	Batch	Method
ime	date/time			
9 10:23 MMF	01/16/19 09:49	1	WG1223836	Gravimetric Analysis by Method 2540 D-2011
9 15:34 DAD	01/18/19 09:31	1	WG1225533	Wet Chemistry by Method 1664A
9 09:00 SJM	01/15/19 09:00	1	WG1222907	Wet Chemistry by Method 4500H+ B-2011
9 14:47 LD	01/15/19 09:50	1	WG1223329	Metals (ICPMS) by Method 200.8
ted date/time Received date/time	Collected by			
9 16:15 01/14/19 09:30				TS2-E-190111 L1060709-02 WW
sis Analyst	Preparation	Dilution	Batch	Method
ime	date/time			
19 21:30 MMF	01/16/19 19:59	1	WG1224079	Gravimetric Analysis by Method 2540 D-2011
9 15:34 DAD	01/18/19 09:31	1	WG1225533	Wet Chemistry by Method 1664A
9 09:00 SJM	01/15/19 09:00	1	WG1222907	Wet Chemistry by Method 4500H+ B-2011
9 14:51 LD	01/15/19 09:50	1	WG1223329	Metals (ICPMS) by Method 200.8
ted date/time Received date/time	Collected by			
9 16:30 01/14/19 09:30				TS3-E-190111 L1060709-03 WW
sis Analyst	Preparation	Dilution	Batch	Method
ime	date/time			
9 21:30 MMF	01/16/19 19:59	1	WG1224079	Gravimetric Analysis by Method 2540 D-2011
9 15:34 DAD	01/18/19 09:31	1	WG1225533	Wet Chemistry by Method 1664A
9 09:00 SJM	01/15/19 09:00	1	WG1222907	Wet Chemistry by Method 4500H+ B-2011
9 14:56 LD	01/15/19 09:50	1	WG1223329	Metals (ICPMS) by Method 200.8
ted date/time Received date/time	Collected by			
9 16:45 01/14/19 09:30				TS4-E-190111 L1060709-04 WW
sis Analyst	Preparation	Dilution	Batch	Method
ime	date/time			
9 21:30 MMF	01/16/19 19:59	1	WG1224079	Gravimetric Analysis by Method 2540 D-2011
9 15:34 DAD	01/18/19 09:31	1	WG1225533	Wet Chemistry by Method 1664A
9 09:00 SJM	01/15/19 09:00	1	WG1222907	Wet Chemistry by Method 4500H+ B-2011
9 15:01 LD	01/15/19 09:50	1	WG1223329	Metals (ICPMS) by Method 200.8
ted date/time Received date/time	Collected by			
9 16:30 01/14/19 09:30				TSX-E-190111 L1060709-05 WW
sis Analyst	Preparation	Dilution	Batch	Method
			1110100 1070	0
		1		
	Preparation date/time 01/16/19 19:59 01/27/19 08:44	Dilution 1 1	Batch WG1224079 WG1229105	



















CDIM Engineering - San Francisco, CA

Wet Chemistry by Method 4500H+ B-2011

Metals (ICPMS) by Method 200.8

WG1222907

WG1223329

01/15/19 09:00

01/15/19 09:50

01/15/19 09:00

01/16/19 13:52

SJM

LD

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Ss













Jared Starkey Project Manager

ONE LAB. NATIONWIDE.

Collected date/time: 01/11/19 15:55

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	U		350	2500	1	01/16/2019 10:23	WG1223836

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		763	5260	1	01/18/2019 15:34	WG1225533



Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	SU			date / time	
рН	7.63	<u>T8</u>	1	01/15/2019 09:00	WG1222907



Cn

Sample Narrative:

L1060709-01 WG1222907: 7.63 at 18.1C

СQс



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Metals (ICPMS) by Method 200.8

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	31.7	J	20.0	100	1	01/16/2019 14:47	WG1223329
Iron	U		15.0	100	1	01/16/2019 14:47	WG1223329
Lead	0.821	<u>J</u>	0.260	1.00	1	01/16/2019 14:47	WG1223329
Zinc	95.7		1.91	10.0	1	01/16/2019 14:47	WG1223329



CDIM Engineering - San Francisco, CA

ONE LAB. NATIONWIDE.

Collected date/time: 01/11/19 16:15

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	4800		357	2550	1	01/16/2019 21:30	WG1224079

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		824	5680	1	01/18/2019 15:34	WG1225533



Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	SU			date / time	
рН	7.95	<u>T8</u>	1	01/15/2019 09:00	WG1222907



Cn

Sample Narrative:

L1060709-02 WG1222907: 7.95 at 18.5C

СQс Gl

`	/ /						
	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	95.7	<u>J</u>	20.0	100	1	01/16/2019 14:51	WG1223329
Iron	169		15.0	100	1	01/16/2019 14:51	WG1223329
Lead	2.17		0.260	1.00	1	01/16/2019 14:51	WG1223329
Zinc	36.9		1.91	10.0	1	01/16/2019 14:51	WG1223329





ONE LAB. NATIONWIDE.

Collected date/time: 01/11/19 16:30

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	U		350	2500	1	01/16/2019 21:30	WG1224079

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Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		763	5260	1	01/18/2019 15:34	WG1225533





	Result	Qualifier	Dilution	Analysis	Batch
Analyte	Su			date / time	
рН	7.33	<u>T8</u>	1	01/15/2019 09:00	WG1222907



СQс



Sample Narrative:

L1060709-03 WG1222907: 7.33 at 18C

,	, ,						
	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	31.5	J	20.0	100	1	01/16/2019 14:56	WG1223329
Iron	U		15.0	100	1	01/16/2019 14:56	WG1223329
Lead	1.26		0.260	1.00	1	01/16/2019 14:56	WG1223329
7inc	47.1		1.91	10.0	1	01/16/2019 14:56	WG1223329



ONE LAB. NATIONWIDE.

Collected date/time: 01/11/19 16:45

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	500	J	350	2500	1	01/16/2019 21:30	WG1224079

Ss

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		797	5490	1	01/18/2019 15:34	WG1225533



Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	<u>Batch</u>
Analyte	su			date / time	
рН	7.40	<u>T8</u>	1	01/15/2019 09:00	WG1222907



Sample Narrative:

DATE/TIME:

01/28/19 13:40

PAGE:

8 of 19



L1060709-04 WG1222907: 7.4 at 18.1C

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	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	37.9	<u>J</u>	20.0	100	1	01/16/2019 15:01	WG1223329
ron	131		15.0	100	1	01/16/2019 15:01	WG1223329
Lead	0.889	<u>J</u>	0.260	1.00	1	01/16/2019 15:01	WG1223329
Zinc	51.5		1.91	10.0	1	01/16/2019 15:01	WG1223329

ONE LAB. NATIONWIDE.

Collected date/time: 01/11/19 16:30

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	U		350	2500	1	01/16/2019 21:30	WG1224079





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Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		755	5210	1	01/27/2019 18:39	WG1229105



Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	su			date / time	
рН	7.20	<u>T8</u>	1	01/15/2019 09:00	WG1222907



Sample Narrative:

L1060709-05 WG1222907: 7.2 at 18.4C

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(/	- ,						
	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	31.1	<u>J</u>	20.0	100	1	01/16/2019 13:52	WG1223329
Iron	U		15.0	100	1	01/16/2019 13:52	WG1223329
Lead	1.16		0.260	1.00	1	01/16/2019 13:52	WG1223329
Zinc	47.8		1.91	10.0	1	01/16/2019 13:52	WG1223329

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 D-2011

L1060709-01

Method Blank (MB)

 (MB) R3376636-1
 O1/16/19 10:23

 MB Result
 MB Qualifier
 MB MDL
 MB RDL

 Analyte
 ug/l
 ug/l
 ug/l

 Suspended Solids
 U
 350
 2500









(OS) L1061072-01 01/16/19 10:23 • (DUP) R3376636-3 01/16/19 10:23

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Suspended Solids	6550000	5940000	1	9.77	J3	5

⁴Cn







(LCS) R3376636-2 01/16/19 10:23

(200) 11007 0000 2 0 11 107 1	Spike Amount		LCS Result	LCS Rec.	Rec. Limits
Analyte	ug/l	и	ug/l	%	%
Suspended Solids	773000	00 8	892000	115	85.0-115





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Gravimetric Analysis by Method 2540 D-2011

L1060709-02,03,04,05

Method Blank (MB)

(MB) R3376656-1 01/16/19	9 21:30			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Suspended Solids	U		350	2500







L1060710-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1060710-01 01/16/19 21:30 • (DUP) R3376656-3 01/16/19 21:30

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Suspended Solids	424000	412000	1	2.87		5









(OS) L1060710-02 01/16/19 21:30 • (DUP) R3376656-4 01/16/19 21:30

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Suspended Solids	77000	79000	1	2.56		5







Laboratory Control Sample (LCS)

(LCS) R3376656-2 01/16/19 21:30

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Suspended Solids	773000	772000	99 9	85 O-115	

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 1664A

L1060709-01,02,03,04

Method Blank (MB)

 MB R3377010-1
 O1/18/19 15:34

 MB Result
 MB Qualifier
 MB MDL
 MB RDL

 Analyte
 ug/l
 ug/l
 ug/l

 TPH - Oil & Grease
 U
 725
 5000







Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3377010-2 01/18/19	15:34 • (LCSD)	R3377010-3 C	17/18/19 15:34							
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
TPH - Oil & Grease	20000	14700	16200	73.5	81.0	64 0-132			9 71	18













ONE LAB. NATIONWIDE.

Wet Chemistry by Method 1664A

L1060709-05

Method Blank (MB)

(MB) R3378978-1 01/2	7/19 18:39			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
TPH - Oil & Grease	II.		725	5000







Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3378978-2	01/27/19 18:39 • (LCSE) R3378978-3	01/27/19 18:39	
	Spike Amount	LCS Result	LCSD Result	LCS Rec.

Analyte	ug/l	ug/l	ug/l	%	%	%	%
TPH - Oil & Grease	20000	18200	18500	91.0	92.5	64.0-132	1.63

LCSD Rec.





L1060709-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) I 1060709-05 01/27/19 18:39 • (MS) R3378978-4 01/27/19 18:39 • (MSD) R3378978-5 01/27/19 18:39

(03) 11000703 03 01/	727/13 10.33 - (1413)	113370370 + 0	1/2//13 10.33	· (IVISD) 1(35703	770 5 01/27/15	10.55						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
TPH - Oil & Grease	20000	П	17200	17700	85.8	88.3	1	64 0-132			2 87	34

Rec. Limits

LCS Qualifier

LCSD Qualifier RPD

RPD Limits % 34







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Wet Chemistry by Method 4500H+ B-2011

L1060709-01,02,03,04,05

L1060154-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1060154-07 01/15/19 09:00 • (DUP) R3375826-2 01/15/19 09:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
рН	5.18	5.18	1	0.000		1



Ss

Sample Narrative:

OS: 5.18 at 18.2C DUP: 5.18 at 18.2C



L1060709-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1060709-05 01/15/19 09:00 • (DUP) R3375826-3 01/15/19 09:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
рН	7.20	7.19	1	0.139		1



Sample Narrative:

OS: 7.2 at 18.4C DUP: 7.19 at 18C



⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3375826-1 01/15/19 09:00

Sample Narrative:

LCS: 9.98 at 17.2C

01/28/19 13:40

14 of 19

ONE LAB. NATIONWIDE.

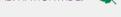
Metals (ICPMS) by Method 200.8

L1060709-01,02,03,04,05

Method Blank (MB)

(MB) R3376196-1 01/16/19 11:11

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Aluminum	U		20.0	100
Iron	U		15.0	100
Lead	U		0.260	1.00
Zinc	U		1.91	10.0



Ср





Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3376196-2 01/16/19 11:16 • (LCSD) R3376196-3 01/16/19 11:21

()	()									
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Aluminum	5000	4840	5000	96.8	99.9	85.0-115			3.20	20
Iron	5000	4820	4970	96.5	99.4	85.0-115			2.99	20
Lead	50.0	48.3	50.0	96.7	99.9	85.0-115			3.32	20
Zinc	50.0	50.0	50.4	100	101	85.0-115			0.730	20

Sr







[®]Al

L1060594-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

 $(OS) \, L1060594 - O3 \, \, 01/16/19 \,\, 11:25 \, \bullet \, (MS) \,\, R3376196 - 5 \, \, \, 01/16/19 \,\, 11:34 \, \bullet \, (MSD) \,\, R3376196 - 6 \, \, \, 01/16/19 \,\, 11:39 \,\, (MSD) \,\, R3376196 - 6 \, \, \, 01/16/19 \,\, 11:39 \,\, (MSD) \,\, R3376196 - 6 \, \, \, 01/16/19 \,\, (MSD) \,\, R3376196 - 6 \, \, \, \, 01/16/19 \,\, (MSD) \,\,$

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Aluminum	5000	63.0	4970	4830	98.1	95.4	1	70.0-130			2.69	20
Iron	5000	37.1	4980	4790	98.9	95.1	1	70.0-130			3.93	20
Lead	50.0	1.02	50.4	49.5	98.8	96.9	1	70.0-130			1.95	20
Zinc	50.0	5.65	53.8	54.0	96.2	96.6	1	70.0-130			0.339	20

Sample Narrative:

OS: Potentially Dissolved

L1060709-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1060709-05 01/16/19 13:52 • (MS) R3376196-7 01/16/19 13:57 • (MSD) R3376196-8 01/16/19 14:01

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Aluminum	5000	31.1	4870	4920	96.7	97.7	1	70.0-130			1.01	20
Iron	5000	U	4950	4950	99.0	99.0	1	70.0-130			0.0428	20
Lead	50.0	1.16	49.7	50.8	97.1	99.3	1	70.0-130			2.16	20
Zinc	50.0	47.8	98.3	98.0	101	101	1	70.0-130			0.268	20

GLOSSARY OF TERMS

ONE LAB. NATIONWIDE.

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
T8	Sample(s) received past/too close to holding time expiration.





















ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky ^{1 6}	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana 1	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















A553	25	s	餬	a.	40
		P	91	14	78
-	4.4		33	24	

CHAIN OF CUSTODY RECORD

C006

		INSTRUCTIONS FOR I	AB PERSON	NNEL:		1	nalys	is Tun	naroud	Time	X Star		0.01	her		ELET.			in a department in the part
ABORATOR SC Laborate 2065 Leban 315) 773-97	ory ion Road, Mt. Juliet, TN 37122	Please send analytic re the original chain-of-cut bas@cdimengineering.com	suits, electron stody form to: n, mec@cdime	nic deliverab			Report	S EDD	requir	equired?	Yes	X No	X No	o dry w	eight	Notify	us of a	ny anomal	ethod and detection limit in report. lous peaks in GC or other scans. ny questions or problems
nan Ford		sabificdimengineering cor	Bryan Starks			19	парин	L BUILT	gadana ,					ESTE					COC Number:
		Project Manager: Phone Number Sampled by: Sample date(s):	415-498-053				Solids (SM 2540D)	SGT-HEM)	~					in the second					Page of
	NFORMATION LRTC 2018-2019 Industrial Stormwater 101-003, Task 1 402 Wright Avenue, Richmond CA 94804		ť,			(SM 4500HB)	Suspended	Grease (EPA 1	Metals- Al, Fe, Pb, 2 , 200.8 ICP-MS)										L 1060 709
Table 14-	Comple Identification	Sample Date	Sample	Sample Matrix	# of Cont.	pH (S	Total	Oil &	Total (EPA			5	1			1 Y		-	Sample Specific Notes:
Lab ID	Sample Identification TS1-E-190111	1/11/2019	1555	w	5	X	X	X	X				1	2	-	2	1		-0
812	The state of the s	1/11/2019	1615	w	5	X	X	X	X	5			4 3			- 2			-02
	TS2-E-190111 TS3-E-190111	1/11/2019	1630	W	5	X	X	X	X	- 19		20		13					-03
	TS4-E-190111	1/11/2019	1645	w	5	X	х	Х	X		100	1						1500	- d
	TSX-E-190111	1/11/2019	1630	w	9	X	Х	X	Х				, v	100	-1		10		Perform MS/MSO using additional volume provided
Las				35		3								1.33		-	1		A STATE OF THE STA
- 3	Minus garages					1						-	-	-		+	-		THE RESIDENCE OF THE PARTY OF T
10	ATTACK TO THE REAL PROPERTY.	The state of the s				E		100		5.4				-		-	1	1	10 0 0 0 0 0 0 0
1.000	a companies	- W. C. S.	-		1 50	1			13	-	-			10			1		A Charles and Annual Control
		t territori	1201			13			130								_		
				Field Fil	tered (X):	4		1	58	1						19	100		
P. Park	servation Used: 1= Ice, 2= HCl; 3= H ₂ SC	D - A=HNO 5=NaOH: 6= Ott	her	The state of the s	SECOND	1	1	1,3	1,4	1,4	(51)	60	55	130				100	
Special II	nstructions/QC Requirements & C	Comments: Level II Re	port. Repor	0.2023 6	rting limit	and	met	hod (detec	/ 771	nit. Ar	nalyze	and n	eport o	only th	1.0	/1.6	d above	0.
Relinguishe	Cooler (lot	Company:	1	Date/Time		Rec	/O]	(7)	125	/ ///	_	100		O	Compa	any:			Date/Time:
Retroushe	Stable 15	Company:		Date/Time	2020	Rec	eived	by:	190		00	Se		0	Comp	any.	alk.	W.T.	Date/Time:
Relinquishe	ed by	Company:	in the	Date/Time		Rec	peived		9	/h		7		0	Comp	any:	Jan.		1-14-19 09-30
	x = Samples released to a secure	d, locked area.	70.7	1/2					Samp	les rece	Ned for	m a sec					-		Title of
180	SAMPLERS NAME	Buyer St	als	M. C.					1		LE#		8	08	25	6	92	020	(ount = 2971
1	SAMPLERS SIGNAT	URE AL	5	7.75	775	3		16		DATE	/ TIME		1/1	1/10	1		60	100	OV. 10

Pace Analytical National Cer Cooler Re	ceipt Form	acion	
Client: CDIEBGGGCA	SDG#	1.10	060769
Cooler Received/Opened On: 1/14 /19	Temperature:	14:/10:/16:	
Received By: Troy Dunlap		117 (118;	11.65 €
Signature: My W			
Receipt Check List	NP I	Yes	No
COC Seal Present / Intact?	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	-	110
COC Signed / Accurate?		-	rabig con
Bottles arrive intact?	market and the second of the second	- 7	
Correct bottles used?		-	
Sufficient volume sent?	4 - 52 - 3 - 5 - 5 - 5 - 5	100	7.7.7
If Applicable			
VOA Zero headspace?			87.73.7
Preservation Correct / Checked?			



ANALYTICAL REPORT

January 18, 2019

CDIM Engineering - San Francisco, CA

Sample Delivery Group: L1060710

Samples Received: 01/14/2019

Project Number: 101-003, TASK 1

Description: LRTC 2018-2019 Industrial Stormwater 402 WRIGHT AVE, RICHMOND, CA Site:

Report To: Mary Cunningham

45 Polk Street

3rd Floor

San Francisco, CA 94102

Entire Report Reviewed By:

Buar Ford

Brian Ford Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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TS1-I-190111 L1060710-01 WW			Collected by	Collected date/time 01/11/19 15:50	Received date/time 01/14/19 09:30
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1224079	1	01/16/19 19:59	01/16/19 21:30	MMF
Wet Chemistry by Method 1664A	WG1225533	1	01/18/19 09:31	01/18/19 15:34	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1224021	1	01/16/19 08:45	01/16/19 08:45	SJM
Metals (ICPMS) by Method 200.8	WG1223329	1	01/15/19 09:50	01/16/19 15:05	LD
			Collected by	Collected date/time	Received date/time
TS2-I-190111 L1060710-02 WW				01/11/19 16:05	01/14/19 09:30
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1224079	1	01/16/19 19:59	01/16/19 21:30	MMF
Wet Chemistry by Method 1664A	WG1225533	1	01/18/19 09:31	01/18/19 15:34	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1224021	1	01/16/19 08:45	01/16/19 08:45	SJM
Metals (ICPMS) by Method 200.8	WG1223329	1	01/15/19 09:50	01/16/19 15:10	LD
			Collected by	Collected date/time 01/11/19 16:25	Received date/time 01/14/19 09:30
TS3-I-190111 L1060710-03 WW				01/11/13 10.23	01/14/15 05.50
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1224079	1	01/16/19 19:59	01/16/19 21:30	MMF
Wet Chemistry by Method 1664A	WG1225533	1	01/18/19 09:31	01/18/19 15:34	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1224021	1	01/16/19 08:45	01/16/19 08:45	SJM
Metals (ICPMS) by Method 200.8	WG1223329	1	01/15/19 09:50	01/16/19 15:14	LD
			Collected by	Collected date/time	Received date/time
TS4-I-190111 L1060710-04 WW				01/11/19 16:40	01/14/19 09:30
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1224079	1	01/16/19 19:59	01/16/19 21:30	MMF
Wet Chemistry by Method 1664A	WG1225533	1	01/18/19 09:31	01/18/19 15:34	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1224021	1	01/16/19 08:45	01/16/19 08:45	SJM

WG1223329

10

01/15/19 09:50

01/16/19 15:19

LD



















CDIM Engineering - San Francisco, CA

1 ____

















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford Project Manager

Buar Ford

ONE LAB. NATIONWIDE.

Collected date/time: 01/11/19 15:50

L1060710

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	424000		14000	100000	1	01/16/2019 21:30	WG1224079

²Tc

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		788	5440	1	01/18/2019 15:34	WG1225533



Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	Su			date / time	
рН	8.01	<u>T8</u>	1	01/16/2019 08:45	WG1224021



Cn

Sample Narrative:

L1060710-01 WG1224021: 8.01 at 17.2C

⁷Gl

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	2660		20.0	100	1	01/16/2019 15:05	WG1223329
Iron	6480		15.0	100	1	01/16/2019 15:05	WG1223329
Lead	130		0.260	1.00	1	01/16/2019 15:05	WG1223329
Zinc	591		1.91	10.0	1	01/16/2019 15:05	WG1223329





ONE LAB. NATIONWIDE.

Collected date/time: 01/11/19 16:05

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	77000		1750	12500	1	01/16/2019 21:30	WG1224079



Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		771	5320	1	01/18/2019 15:34	WG1225533



Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	su			date / time	
pH	7.69	<u>T8</u>	1	01/16/2019 08:45	WG1224021



Cn

Sample Narrative:

L1060710-02 WG1224021: 7.69 at 18.3C

СQс

Gl

ΆΙ

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	904		20.0	100	1	01/16/2019 15:10	WG1223329
Iron	1990		15.0	100	1	01/16/2019 15:10	WG1223329
Lead	21.3		0.260	1.00	1	01/16/2019 15:10	WG1223329
Zinc	110		1.91	10.0	1	01/16/2019 15:10	WG1223329





ONE LAB. NATIONWIDE.

Collected date/time: 01/11/19 16:25

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>	
Analyte	ug/l		ug/l	ug/l		date / time		
Suspended Solids	21900		354	2530	1	01/16/2019 21:30	WG1224079	



Ss

Cn

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		763	5260	1	01/18/2019 15:34	WG1225533



Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	su			date / time	
рН	7.44	<u>T8</u>	1	01/16/2019 08:45	WG1224021



Sample Narrative:

Gl

L1060710-03 WG1224021: 7.44 at 18.1C



	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	565		20.0	100	1	01/16/2019 15:14	WG1223329
Iron	1120		15.0	100	1	01/16/2019 15:14	WG1223329
Lead	54.2		0.260	1.00	1	01/16/2019 15:14	WG1223329
Zinc	88.8		1.91	10.0	1	01/16/2019 15:14	WG1223329

ONE LAB. NATIONWIDE.

Collected date/time: 01/11/19 16:40

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	8800		350	2500	1	01/16/2019 21:30	WG1224079



Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	5850		771	5320	1	01/18/2019 15:34	WG1225533



Ss



	Result	Qualifier	Dilution	Analysis	Batch
Analyte	SU			date / time	
рН	7.43	<u>T8</u>	1	01/16/2019 08:45	WG1224021





Sample Narrative:

L1060710-04 WG1224021: 7.43 at 18.1C



ΆΙ

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	209	<u>J</u>	200	1000	10	01/16/2019 15:19	WG1223329
Iron	448	<u>J</u>	150	1000	10	01/16/2019 15:19	WG1223329
Lead	8.59	<u>J</u>	2.60	10.0	10	01/16/2019 15:19	WG1223329
Zinc	101		19.1	100	10	01/16/2019 15:19	WG1223329



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Gravimetric Analysis by Method 2540 D-2011

L1060710-01,02,03,04

Method Blank (MB)

(MB) R3376656-1 01/16/19	9 21:30			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Suspended Solids	U		350	2500









(OS) L1060710-01 01/16/19 21:30 • (DUP) R3376656-3 01/16/19 21:30

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Suspended Solids	424000	412000	1	2 87		5







(OS) L1060710-02 01/16/19 21:30 • (DUP) R3376656-4 01/16/19 21:30

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits	
Analyte	ug/l	ug/l		%		%	
Suspended Solids	77000	79000	1	2.56		5	





Laboratory Control Sample (LCS)

(LCS) R3376656-2 01/16/19 21:30

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Suspended Solids	773000	772000	99 9	85 O-115	

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01/18/19 17:42

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 1664A

L1060710-01,02,03,04

64.0-132

Method Blank (MB)

TPH - Oil & Grease

TPH - Oil & Grease

(MB) R3377010-1 01/18/19 15:34

MB Result MB Qualifier MB MDL MB RDL

Analyte ug/l ug/l ug/l

U

20000









14700

725

16200

(LCS) R337/010-2 01/18/19 15:34 • (LCSD) R337/010-3 01/18/19 15:34											
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD		
Analyte	ug/l	ug/l	ug/l	%	%	%			%		

5000

73.5

81.0













CDIM Engineering - San Francisco, CA

RPD Limits %

18

9.71

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 4500H+ B-2011

L1060710-01,02,03,04

L1059717-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1059717-01 01/16/19 08:45 • (DUP) R3376139-2 01/16/19 08:45

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	Su	SU		%		%
рН	9.51	9.50	1	0.105		1



³Ss

Sample Narrative:

OS: 9.51 at 13.8C DUP: 9.5 at 13.7C



⁵Sr

L1061076-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1061076-01 01/16/19 08:45 • (DUP) R3376139-3 01/16/19 08:45

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	SU		%		%
рН	7.36	7.38	1	0.271		1









Sample Narrative:

OS: 7.36 at 18C DUP: 7.38 at 18.2C

Laboratory Control Sample (LCS)

(LCS) R3376139-1 01/16/19 08:45

Sample Narrative:

LCS: 10 at 17.7C

01/18/19 17:42

ONE LAB. NATIONWIDE.

Metals (ICPMS) by Method 200.8

L1060710-01,02,03,04

Method Blank (MB)

(MB) R3376196-1 01/16/19 11:11

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Aluminum	U		20.0	100
Iron	U		15.0	100
Lead	U		0.260	1.00
7inc	H		1 01	10.0









Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3376196-2 01/16/19 11:16 • (LCSD) R3376196-3 01/16/19 11:21

,	,									
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Aluminum	5000	4840	5000	96.8	99.9	85.0-115			3.20	20
Iron	5000	4820	4970	96.5	99.4	85.0-115			2.99	20
Lead	50.0	48.3	50.0	96.7	99.9	85.0-115			3.32	20
Zinc	50.0	50.0	50.4	100	101	85.0-115			0.730	20









L1060594-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1060594-03 01/16/19 11:25 • (MS) R3376196-5 01/16/19 11:34 • (MSD) R3376196-6 01/16/19 11:39

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Aluminum	5000	63.0	4970	4830	98.1	95.4	1	70.0-130			2.69	20
Iron	5000	37.1	4980	4790	98.9	95.1	1	70.0-130			3.93	20
Lead	50.0	1.02	50.4	49.5	98.8	96.9	1	70.0-130			1.95	20
Zinc	50.0	5.65	53.8	54.0	96.2	96.6	1	70.0-130			0.339	20

L1060709-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Aluminum	5000	31.1	4870	4920	96.7	97.7	1	70.0-130			1.01	20
Iron	5000	U	4950	4950	99.0	99.0	1	70.0-130			0.0428	20
Lead	50.0	1.16	49.7	50.8	97.1	99.3	1	70.0-130			2.16	20
Zinc	50.0	47.8	98.3	98.0	101	101	1	70.0-130			0.268	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

	·
J	The identification of the analyte is acceptable; the reported value is an estimate.
T8	Sample(s) received past/too close to holding time expiration.









Ss













PAGE:

ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky ^{1 6}	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LA000356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















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CHAIN OF CUSTODY RECORD

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Pace Analytical National Center for Testing & Innovation Cooler Receipt Form							
Client: CDIENGSFCA	SDG#	40	60710				
Cooler Received/Opened On: 1/ 4/19	Temperature:	1.40/100	11.60				
Received By: Troy Dunlap							
Signature: Rey Cl							
Receipt Check List	NP	Yes	No				
COC Seal Present / Intact?	The state of the s						
COC Signed / Accurate?		-					
Bottles arrive intact?		1	5				
Correct bottles used?		-					
Sufficient volume sent?		11					
If Applicable			E III				
VOA Zero headspace?			100				
Preservation Correct / Checked?		/					



January 29, 2019

Vista Work Order No. 1900110

Mr. Scott Bourne CDIM Engineering 45 Polk Street, 3rd Floor San Francisco, CA 94102

Dear Mr. Bourne,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on January 14, 2019 under your Project Name '101-003, Task 1'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 ph: 916-673-1520 fx: 916-673-0106 www.vista-analytical.com

Work Order 1900110 Page 1 of 14

Vista Work Order No. 1900110 Case Narrative

Sample Condition on Receipt:

One water sample was received in good condition and within the method temperature requirements. The sample was received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

EPA Method 1699

The sample was extracted and analyzed for chlorinated pesticides by EPA Method 1699 using a ZB-50 GC column.

Holding Times

The sample was extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected above the sample quantitation limits in the Method Blank. The OPR recoveries were within the method acceptance criteria.

Labeled standard recoveries for all QC and field samples were within method acceptance criteria.

Work Order 1900110 Page 2 of 14

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Sample Inventory	4
Analytical Results	5
Qualifiers	9
Certifications	10
Sample Receipt	13

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1900110-01	TS2-E-190111	11-Jan-19 16:15	14-Jan-19 07:54	Amber Glass NM Bottle, 1L
				Amber Glass NM Bottle, 1L
				Amber Glass NM Bottle 1I

Vista Project: 1900110 Client Project: 101-003, Task 1

Work Order 1900110 Page 4 of 14

ANALYTICAL RESULTS

Work Order 1900110 Page 5 of 14

Sample ID: Method Blank EPA Method 1699

Matrix: Aqueous QC Batch: B9A0130 Lab Sample: B9A0130-BLK1

Sample Size: 1.00 L Date Extracted: 16-Jan-2019 11:26 Date Analyzed: 25-Jan-19 22:27 Column: ZB-50

Analyte C	onc. (pg/L)	DL	EMPC	Qualifiers]	Labeled Standard	%R	LCL-UCL	Qualifiers
Hexachlorobenzene	7.15			J	IS	13C6-Hexachlorobenzene	65.3	5 - 120	
alpha-BHC	ND	2.89			IS	13C6-alpha-BHC	81.2	32 - 130	
Lindane (gamma-BHC)	ND	3.91			IS	13C6-Lindane (gamma-BHC)	85.9	11 - 120	
beta-BHC	ND	3.53			IS	13C6-beta-BHC	86.3	32 - 130	
delta-BHC	ND	2.96			IS	13C6-delta-BHC	88.7	36 - 137	
Heptachlor	ND	1.57			IS	13C10-Heptachlor	94.0	5 - 120	
Aldrin	ND	2.33			IS	13C12-Aldrin	86.3	5 - 120	
Oxychlordane	ND	7.39			IS	13C10-Oxychlordane	96.2	23 - 135	
cis-Heptachlor Epoxide	ND	6.14			IS	13C10-cis-Heptachlor Epoxide	93.9	27 - 137	
trans-Heptachlor Epoxid	e ND	15.9			IS	13C10-trans-Chlordane (gamma)	92.7	21 - 132	
trans-Chlordane (gamma) ND	6.79			IS	13C10-trans-Nonachlor	90.7	14 - 136	
trans-Nonachlor	ND	6.73			IS	13C9-Endosulfan I (alpha)	89.7	15 - 148	
cis-Chlordane (alpha)	ND	6.78			IS	13C12-2,4'-DDE	85.6	47 - 160	
Endosulfan I (alpha)	ND	9.53			IS	13C12-4,4'-DDE	86.1	47 - 160	
2,4'-DDE	ND	2.10			IS	13C12-Dieldrin	92.2	40 - 151	
4,4'-DDE	ND	2.48			IS	13C12-Endrin	97.6	35 - 155	
Dieldrin	ND	1.86			IS	13C10-cis-Nonachlor	85.6	36 - 139	
Endrin	ND	2.57			IS	13C9-Endosulfan II (beta)	82.3	5 - 122	
cis-Nonachlor	ND	3.80			IS	13C12-2,4'-DDD	91.2	5 - 199	
Endosulfan II (beta)	ND	6.13			IS	13C12-2,4'-DDT	81.4	5 - 199	
2,4'-DDD	ND	3.95			IS	13C12-4,4'-DDD	88.2	5 - 120	
2,4'-DDT	ND	7.48			IS	13C12-4,4'-DDT	86.2	5 - 120	
4,4'-DDD	ND	4.42			IS	13C9-Endosulfan Sulfate	86.3	15 - 148	
4,4'-DDT	ND	7.07			IS	13C12-Methoxychlor	79.0	5 - 120	
Endosulfan Sulfate	ND	3.65			IS	13C10-Mirex	72.0	5 - 120	
4,4'-Methoxychlor	ND	2.25			IS	13C12-Endrin Aldehyde	70.6	15 - 148	
Mirex	ND	1.08			IS	13C12-Endrin Ketone	86.5	15 - 148	
Endrin Aldehyde	ND	2.37							
Endrin Ketone	ND	3.27							

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

Work Order 1900110 Page 6 of 14



Sample ID: OPR EPA Method 1699

Matrix: Aqueous QC Batch: B9A0130 Lab Sample: B9A0130-BS1

Sample Size: 1.00 L Date Extracted: 16-Jan-2019 11:26 Date Analyzed: 25-Jan-19 20:48 Column: ZB-50

Analyte	Amt Found (pg/L)	Spike Amt	%R	Limits		Labeled Standard	%R	LCL-UCL
Hexachlorobenzene	971	1000	97.1	50 - 120	IS	13C6-Hexachlorobenzene	69.3	5 - 120
alpha-BHC	983	1000	98.3	50 - 120	IS	13C6-alpha-BHC	83.2	17 - 141
Lindane (gamma-BHC)	970	1000	97.0	50 - 120	IS	13C6-Lindane (gamma-BHC)	89.5	5 - 124
beta-BHC	1000	1000	100	50 - 120	IS	13C6-beta-BHC	88.6	17 - 141
delta-BHC	990	1000	99.0	50 - 120	IS	13C6-delta-BHC	91.3	16 - 150
Heptachlor	942	1000	94.2	50 - 120	IS	13C10-Heptachlor	96.6	5 - 128
Aldrin	978	1000	97.8	50 - 120	IS	13C12-Aldrin	85.1	5 - 126
Oxychlordane	894	1000	89.4	50 - 120	IS	13C10-Oxychlordane	106	5 - 144
cis-Heptachlor Epoxide	973	1000	97.3	50 - 120	IS	13C10-cis-Heptachlor Epoxide	102	8 - 146
trans-Heptachlor Epoxide	916	1000	91.6	50 - 120	IS	13C10-trans-Chlordane (gamma)	97.4	15 - 144
trans-Chlordane (gamma)	950	1000	95.0	50 - 120	IS	13C10-trans-Nonachlor	98.7	13 - 149
trans-Nonachlor	967	1000	96.7	50 - 120	IS	13C9-Endosulfan I (alpha)	102	5 - 144
cis-Chlordane (alpha)	964	1000	96.4	50 - 120	IS	13C12-2,4'-DDE	90.5	26 - 169
Endosulfan I (alpha)	944	1000	94.4	50 - 120	IS	13C12-4,4'-DDE	93.6	26 - 169
2,4'-DDE	939	1000	93.9	24 - 123	IS	13C12-Dieldrin	100	19 - 161
4,4'-DDE	970	1000	97.0	50 - 120	IS	13C12-Endrin	102	20 - 157
Dieldrin	973	1000	97.3	50 - 120	IS	13C10-cis-Nonachlor	101	17 - 154
Endrin	991	1000	99.1	50 - 120	IS	13C9-Endosulfan II (beta)	96.7	5 - 120
cis-Nonachlor	998	1000	99.8	50 - 120	IS	13C12-2,4'-DDD	107	14 - 200
Endosulfan II (beta)	955	1000	95.5	5 - 200	IS	13C12-2,4'-DDT	97.8	14 - 200
2,4'-DDD	970	1000	97.0	50 - 120	IS	13C12-4,4'-DDD	109	14 - 200
2,4'-DDT	1090	1000	109	50 - 120	IS	13C12-4,4'-DDT	108	13 - 200
4,4'-DDD	969	1000	96.9	42 - 120	IS	13C9-Endosulfan Sulfate	101	5 - 144
4,4'-DDT	965	1000	96.5	50 - 120	IS	13C12-Methoxychlor	105	8 - 200
Endosulfan Sulfate	927	1000	92.7	50 - 120	IS	13C10-Mirex	87.2	5 - 138
4,4'-Methoxychlor	987	1000	98.7	50 - 120	IS	13C12-Endrin Aldehyde	74.1	5 - 144
Mirex	971	1000	97.1	50 - 120	IS	13C12-Endrin Ketone	94.8	5 - 144
Endrin Aldehyde	945	1000	94.5	50 - 134				
Endrin Ketone	949	1000	94.9	50 - 134				

LCL-UCL - Lower control limit - upper control limit

Work Order 1900110 Page 7 of 14

Client Data			Sample Data		Labo	oratory	y Data			
Name: CDIM	I Engineering		Matrix:	Water	Lai	Samp	ble: 1900110-01	Date Received:	14-Jan-2019	7:54
Project: 101-0	03, Task 1		Sample Size:	0.979 L	QC	Batch	: B9A0130	Date Extracted:	16-Jan-2019	11:26
Date Collected: 11-Jan	n-2019 16:15				Da	te Anal	yzed: 26-Jan-19 02:32 Column	ZB-50		
	(7)		FIANC		0 119	1		0 / D	T.GT. U.GT.	0 110
	48 /	DL	EMPC		Qualifiers		Labeled Standard	%R	LCL-UCL	Qualifiers
Hexachlorobenzene	106				В	IS	13C6-Hexachlorobenzene	71.4	5 - 120	
alpha-BHC	49.6					IS	13C6-alpha-BHC	70.7	32 - 130	
Lindane (gamma-BHC)	36.2				J	IS	13C6-Lindane (gamma-BHC)	73.5	11 - 120	
beta-BHC	54.0					IS	13C6-beta-BHC	74.7	32 - 130	
delta-BHC	5.68				J	IS	13C6-delta-BHC	75.0	36 - 137	
Heptachlor		5.23				IS	13C10-Heptachlor	88.6	5 - 120	
Aldrin		13.9				IS	13C12-Aldrin	73.9	5 - 120	
Oxychlordane		44.5				IS	13C10-Oxychlordane	82.0	23 - 135	
cis-Heptachlor Epoxide	84.8					IS	13C10-cis-Heptachlor Epoxide	79.5	27 - 137	
trans-Heptachlor Epoxide	428					IS	13C10-trans-Chlordane (gamma		21 - 132	
trans-Chlordane (gamma)	311					IS	13C10-trans-Nonachlor	75.2	14 - 136	
trans-Nonachlor	173					IS	13C9-Endosulfan I (alpha)	75.5	15 - 148	
cis-Chlordane (alpha)	439					IS	13C12-2,4'-DDE	74.0	47 - 160	
Endosulfan I (alpha)	ND :	57.0				IS	13C12-4,4'-DDE	69.0	47 - 160	
2,4'-DDE	99.6					IS	13C12-Dieldrin	70.3	40 - 151	
4,4'-DDE	3450					IS	13C12-Endrin	68.1	35 - 155	
Dieldrin	1540					IS	13C10-cis-Nonachlor	62.0	36 - 139	
Endrin	597					IS	13C9-Endosulfan II (beta)	65.6	5 - 122	
cis-Nonachlor	ND 3	37.8				IS	13C12-2,4'-DDD	75.1	5 - 199	
Endosulfan II (beta)	ND :	53.1				IS	13C12-2,4'-DDT	65.6	5 - 199	
2,4'-DDD	644					IS	13C12-4,4'-DDD	69.4	5 - 120	
2,4'-DDT	1140					IS	13C12-4,4'-DDT	68.5	5 - 120	
4,4'-DDD	1420					IS	13C9-Endosulfan Sulfate	60.4	15 - 148	
4,4'-DDT	4480					IS	13C12-Methoxychlor	49.6	5 - 120	
Endosulfan Sulfate		65.0				IS	13C10-Mirex	40.6	5 - 120	
4,4'-Methoxychlor		147				IS	13C12-Endrin Aldehyde	48.1	15 - 148	
Mirex		10.0				IS	13C12-Endrin Ketone	52.9	15 - 148	
Endrin Aldehyde		29.5								
Endrin Ketone	545									
DL - Sample specife estimated							I Lower control limit upper control limit			

DL - Sample specifc estimated detection limit

Sample ID: TS2-E-190111

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

EPA Method 1699

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DATA QUALIFIERS & ABBREVIATIONS

B This compound was also detected in the method blank

Conc. Concentration

D Dilution

DL Detection limit

E The associated compound concentration exceeded the calibration range of the

instrument

H Recovery and/or RPD was outside laboratory acceptance limits

I Chemical Interference

J The amount detected is below the Reporting Limit/LOQ

LOD Limits of Detection

LOQ Limits of Quantitation

M Estimated Maximum Possible Concentration (CA Region 2 projects only)

NA Not applicable

ND Not Detected

P The reported concentration may include contribution from chlorinated diphenyl

ether(s).

Q Ion ratio outside of 70-130% of Standard Ratio.

TEQ Toxic Equivalency

U Not Detected (specific projects only)

* See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

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Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	19-013-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1521520
New Hampshire Environmental Accreditation Program	207718
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-009
Pennsylvania Department of Environmental Protection	015
Texas Commission on Environmental Quality	T104704189-18-9
Virginia Department of General Services	9618
Washington Department of Ecology	C584-18
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

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NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA 23
Dibenzofurans	
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA TO-9A
Dibenzofurans	

MATRIX: Biological Tissue							
Description of Test	Method						
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B						
Dilution GC/HRMS							
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A						
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue	EPA 1668A/C						
by GC/HRMS							
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by	EPA 1699						
HRGC/HRMS							
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537						
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by	EPA 8280A/B						
GC/HRMS							
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA						
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A						

MATRIX: Drinking Water	
Description of Test	Method
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA
	1613/1613B
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009

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MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B
Dilution GC/HRMS	
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue	EPA 1668A/C
by GC/HRMS	
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated	EPA 8280A/B
Dibenzofurans by GC/HRMS	
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A

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CHAIN OF CUSTODY RECORD

1900110 0.5	19	110	0.50
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LABORATO	NPV:	INICTOLICTIONS FOR	I AD DEDOG	NAME :			Analysis	Turnara	ud Timo	V Cte	ndord	- Othor				110	101100
Vista Analyt 1104 Windfi (916) 673-1	ical eld Way, El Dorado Hills CA 95762 520	INSTRUCTIONS FOR Please send analytic rithe original chain-of-cubas@cdimengineering.cc	esults, electroustody form to m, mec@cdim	onic delivera o:			Analysis GeoTrac LOCUS I Report R	ker EDF EDD req	required?	d? o	andard Yes X X No K MDL	□ <u>Other</u> No		Notify u	s of any anom		ection limit in report. GC or other scans. r problems.
Karen Volpe	endesta	sab@cdimengineering co	<u>om</u>				Report se	oil result	s to:	o wet we	ight (total)	□ dry	weight				10-2-5-50
CDIM CON	TACT:	Project Manager:	Bryan Starks	S						ANA	ALYSIS R					C	OC Number:
CDIM Engin	eering	Phone Number	415-498-053	35					T					1			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
45 Polk Stre	et, 3rd Floor	Sampled by:															
	co, California 94102								1 1					1 1		1100	1 1
		Sample date(s):				0		1	1 1							Page	of _(_
	NFORMATION LRTC 2018-2019 Industrial Stormwater					6		1					18				
Job Ivallie.	ENTO 2010-2019 Industrial Storniwater					69			1 1					1 1		3	SDG number:
Job #:	101-003, Task 1					(EPA 1699)			1 1	1 11							
						Ë			1 1								
Address:	402 Wright Avenue, Richmond CA 94804								1 1								
Lab ID	Sample Identification	Sample Date	Sample Time	Sample Matrix	# of Cont.	Pesticides										Samp	le Specific Notes:
	TS2-E-190111	1/11/2019	1615	w	3	X		7									
			1013			1		+		-	+ +	-	-	+++		+	
								+-	-		+	-		+		-	
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							H, E										
SE				Field Filt	ered (X):												
Prese	ervation Used: 1= Ice, 2= HCI; 3= H ₂ SO ₄ ;	4=HNO ₃ ; 5=NaOH; 6= Othe	r			1					litery.						
Special Ins	tructions/QC Requirements & Cor	mments: Level II Repo	ort. Report v	with report	ina limit	and m	ethod o	detecti	on lim	it Analy	vze and	eport or	ly the m	netals list	ted above		
				and the ferr													
Relinquished b	v: / _/	Company:		Date/Time:		Recei	ved by:	1	0				Company			Dotation	
, company of p	Juny to	COM		1/11/19	7031		eM/\ -	PU	10			0	Company	10		Date/Time:	9 1254
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Relinquished b	y:	Company:		Date/Time:		Recei	red by:					1	Company:			Date/Time:	
	x = Samples released to a secured, I	ocked area.					0 =	Sample	s receive	ed from a	secured, lo	O ocked area					
	SAMPLERS NAME	Bryam Sto	who						MOBILE		1		0	9230	3		
	SAMPLERS SIGNATURE								DATE /		11	11 1 12				-	1
	1	Mes =	700						2,,,,,,,,,		11/1	1/19		03 (



Sample Log-In Checklist

Vista Work Orde	er#:	900	0110			Page#	. 1	of	
Samples Arrival:	Date/Time	0754	Initials:	2)		eation:			
Logged In:	Date/Time	0911	Initials:	6		ation: elf/Rack	WIR	2	
Delivered By:	PedEX UP	S On Tra	ac GSO	DH	L	Han Delive		Oth	ner
Preservation:								None	
Temp °C: (), () Temp °C: (), 5		Probe use	ed: Y /(N	>	The	rmome	ter ID:	Hey	
					14 (17)) 1 (11)		YES	NO	NA
Adequate Sampl	e Volume Recei	ved?					1		4
Holding Time Ac	ceptable?						~		
Shipping Contain	ner(s) Intact?						./		
Shipping Custod	y Seals Intact?								V
Shipping Docum	entation Present	?					/		
Airbill F.O.	Trk # 1	849 352	4 817	0			1		
Sample Containe	er Intact?						~		
Sample Custody	Seals Intact?								1
Chain of Custody	/ / Sample Docui	mentation Pr	esent?				/		
COC Anomaly/Sa	ample Acceptant	ce Form com	pleted?						1

Comments:

ID .: LR - SLC

Preservation Documented:

Shipping Container

Rev No.: 3

If Chlorinated or Drinking Water Samples, Acceptable Preservation?

Other

Na₂S₂O₃

Vista

Trizma

Client

Rev Date: 05 October 2018

None

Retain

Page: 1 of 1

Yes

Return

No

Dispose



January 29, 2019

Vista Work Order No. 1900109

Mr. Scott Bourne CDIM Engineering 45 Polk Street, 3rd Floor San Francisco, CA 94102

Dear Mr. Bourne,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on January 14, 2019 under your Project Name '101-003, Task 1'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 ph: 916-673-1520 fx: 916-673-0106 www.vista-analytical.com

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Vista Work Order No. 1900109 Case Narrative

Sample Condition on Receipt:

One water sample was received in good condition and within the method temperature requirements. The sample was received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

EPA Method 1699

The sample was extracted and analyzed for chlorinated pesticides by EPA Method 1699 using a ZB-50 GC column.

Holding Times

The sample was extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected above the sample quantitation limits in the Method Blank. The OPR recoveries were within the method acceptance criteria.

The labeled standard recoveries outside the method acceptance criteria are listed in the table below:

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
1900109-01	TS2-I-190111	EPA Method 1699	13C12-2,4'-DDE	Н	44.2
1900109-01	TS2-I-190111	EPA Method 1699	13C12-4,4'-DDE	Н	33.6
1900109-01	TS2-I-190111	EPA Method 1699	13C12-Dieldrin	Н	36.7
1900109-01	TS2-I-190111	EPA Method 1699	13C12-Endrin	Н	33.5
1900109-01	TS2-I-190111	EPA Method 1699	13C10-cis-Nonachlor	Н	25.0

H = Recovery was outside laboratory acceptance criteria.

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Qualifiers	9
Certifications	10
Sample Receipt	13

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1900109-01	TS2-I-190111	11-Jan-19 16:05	14-Jan-19 07:54	Amber Glass NM Bottle, 1L
				Amber Glass NM Bottle, 1L
				Amber Glass NM Bottle. 1L

Vista Project: 1900109 Client Project: 101-003, Task 1

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ANALYTICAL RESULTS

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Sample ID: Method Blank EPA Method 1699

Matrix: Aqueous QC Batch: B9A0130 Lab Sample: B9A0130-BLK1

Sample Size: 1.00 L Date Extracted: 16-Jan-2019 11:26 Date Analyzed: 25-Jan-19 22:27 Column: ZB-50

Analyte Co	onc. (pg/L)	DL EMPC	Qualifiers	I	abeled Standard	%R	LCL-UCL	Qualifiers
Hexachlorobenzene	7.15		J	IS	13C6-Hexachlorobenzene	65.3	5 - 120	
alpha-BHC	ND	2.89		IS	13C6-alpha-BHC	81.2	32 - 130	
Lindane (gamma-BHC)	ND	3.91		IS	13C6-Lindane (gamma-BHC)	85.9	11 - 120	
beta-BHC	ND	3.53		IS	13C6-beta-BHC	86.3	32 - 130	
delta-BHC	ND	2.96		IS	13C6-delta-BHC	88.7	36 - 137	
Heptachlor	ND	1.57		IS	13C10-Heptachlor	94.0	5 - 120	
Aldrin	ND	2.33		IS	13C12-Aldrin	86.3	5 - 120	
Oxychlordane	ND	7.39		IS	13C10-Oxychlordane	96.2	23 - 135	
cis-Heptachlor Epoxide	ND	6.14		IS	13C10-cis-Heptachlor Epoxide	93.9	27 - 137	
trans-Heptachlor Epoxide	e ND	15.9		IS	13C10-trans-Chlordane (gamma)	92.7	21 - 132	
trans-Chlordane (gamma)) ND	6.79		IS	13C10-trans-Nonachlor	90.7	14 - 136	
trans-Nonachlor	ND	6.73		IS	13C9-Endosulfan I (alpha)	89.7	15 - 148	
cis-Chlordane (alpha)	ND	6.78		IS	13C12-2,4'-DDE	85.6	47 - 160	
Endosulfan I (alpha)	ND	9.53		IS	13C12-4,4'-DDE	86.1	47 - 160	
2,4'-DDE	ND	2.10		IS	13C12-Dieldrin	92.2	40 - 151	
4,4'-DDE	ND	2.48		IS	13C12-Endrin	97.6	35 - 155	
Dieldrin	ND	1.86		IS	13C10-cis-Nonachlor	85.6	36 - 139	
Endrin	ND	2.57		IS	13C9-Endosulfan II (beta)	82.3	5 - 122	
cis-Nonachlor	ND	3.80		IS	13C12-2,4'-DDD	91.2	5 - 199	
Endosulfan II (beta)	ND	6.13		IS	13C12-2,4'-DDT	81.4	5 - 199	
2,4'-DDD	ND	3.95		IS	13C12-4,4'-DDD	88.2	5 - 120	
2,4'-DDT	ND	7.48		IS	13C12-4,4'-DDT	86.2	5 - 120	
4,4'-DDD	ND	4.42		IS	13C9-Endosulfan Sulfate	86.3	15 - 148	
4,4'-DDT	ND	7.07		IS	13C12-Methoxychlor	79.0	5 - 120	
Endosulfan Sulfate	ND	3.65		IS	13C10-Mirex	72.0	5 - 120	
4,4'-Methoxychlor	ND	2.25		IS	13C12-Endrin Aldehyde	70.6	15 - 148	
Mirex	ND	1.08		IS	13C12-Endrin Ketone	86.5	15 - 148	
Endrin Aldehyde	ND	2.37						
Endrin Ketone	ND	3.27						

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

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Sample ID: OPR EPA Method 1699

Matrix: Aqueous QC Batch: B9A0130 Lab Sample: B9A0130-BS1

Sample Size: 1.00 L Date Extracted: 16-Jan-2019 11:26 Date Analyzed: 25-Jan-19 20:48 Column: ZB-50

Analyte	Amt Found (pg/L)	Spike Amt	%R	Limits		Labeled Standard	%R	LCL-UCL
Hexachlorobenzene	971	1000	97.1	50 - 120	IS	13C6-Hexachlorobenzene	69.3	5 - 120
alpha-BHC	983	1000	98.3	50 - 120	IS	13C6-alpha-BHC	83.2	17 - 141
Lindane (gamma-BHC)	970	1000	97.0	50 - 120	IS	13C6-Lindane (gamma-BHC)	89.5	5 - 124
beta-BHC	1000	1000	100	50 - 120	IS	13C6-beta-BHC	88.6	17 - 141
delta-BHC	990	1000	99.0	50 - 120	IS	13C6-delta-BHC	91.3	16 - 150
Heptachlor	942	1000	94.2	50 - 120	IS	13C10-Heptachlor	96.6	5 - 128
Aldrin	978	1000	97.8	50 - 120	IS	13C12-Aldrin	85.1	5 - 126
Oxychlordane	894	1000	89.4	50 - 120	IS	13C10-Oxychlordane	106	5 - 144
cis-Heptachlor Epoxide	973	1000	97.3	50 - 120	IS	13C10-cis-Heptachlor Epoxide	102	8 - 146
trans-Heptachlor Epoxide	916	1000	91.6	50 - 120	IS	13C10-trans-Chlordane (gamma)	97.4	15 - 144
trans-Chlordane (gamma)	950	1000	95.0	50 - 120	IS	13C10-trans-Nonachlor	98.7	13 - 149
trans-Nonachlor	967	1000	96.7	50 - 120	IS	13C9-Endosulfan I (alpha)	102	5 - 144
cis-Chlordane (alpha)	964	1000	96.4	50 - 120	IS	13C12-2,4'-DDE	90.5	26 - 169
Endosulfan I (alpha)	944	1000	94.4	50 - 120	IS	13C12-4,4'-DDE	93.6	26 - 169
2,4'-DDE	939	1000	93.9	24 - 123	IS	13C12-Dieldrin	100	19 - 161
4,4'-DDE	970	1000	97.0	50 - 120	IS	13C12-Endrin	102	20 - 157
Dieldrin	973	1000	97.3	50 - 120	IS	13C10-cis-Nonachlor	101	17 - 154
Endrin	991	1000	99.1	50 - 120	IS	13C9-Endosulfan II (beta)	96.7	5 - 120
cis-Nonachlor	998	1000	99.8	50 - 120	IS	13C12-2,4'-DDD	107	14 - 200
Endosulfan II (beta)	955	1000	95.5	5 - 200	IS	13C12-2,4'-DDT	97.8	14 - 200
2,4'-DDD	970	1000	97.0	50 - 120	IS	13C12-4,4'-DDD	109	14 - 200
2,4'-DDT	1090	1000	109	50 - 120	IS	13C12-4,4'-DDT	108	13 - 200
4,4'-DDD	969	1000	96.9	42 - 120	IS	13C9-Endosulfan Sulfate	101	5 - 144
4,4'-DDT	965	1000	96.5	50 - 120	IS	13C12-Methoxychlor	105	8 - 200
Endosulfan Sulfate	927	1000	92.7	50 - 120	IS	13C10-Mirex	87.2	5 - 138
4,4'-Methoxychlor	987	1000	98.7	50 - 120	IS	13C12-Endrin Aldehyde	74.1	5 - 144
Mirex	971	1000	97.1	50 - 120	IS	13C12-Endrin Ketone	94.8	5 - 144
Endrin Aldehyde	945	1000	94.5	50 - 134				
Endrin Ketone	949	1000	94.9	50 - 134				

LCL-UCL - Lower control limit - upper control limit

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Sample ID: TS2-	I-190111						EPA Met	thod 1699
Project: 101-0	M Engineering 103, Task 1 n-2019 16:05		Water).988 L	Laborator Lab Sam QC Batcl Date Ana	ple: 1900109-01 n: B9A0130	Date Received: Date Extracted: : ZB-50	14-Jan-2019 16-Jan-2019	
Analyte Conc.	. (pg/L) DI	EMPC	Qualif	iers	Labeled Standard	%R	LCL-UCL	Qualifiers
Hexachlorobenzene	1230		В	IS	13C6-Hexachlorobenzene	84.9	5 - 120	
alpha-BHC	51.0			IS	13C6-alpha-BHC	76.5	32 - 130	
Lindane (gamma-BHC)	45.7			IS	13C6-Lindane (gamma-BHC)	89.4	11 - 120	
beta-BHC	69.6			IS	13C6-beta-BHC	73.9	32 - 130	
delta-BHC	ND 11.	7		IS	13C6-delta-BHC	72.0	36 - 137	
Heptachlor	37.0		J	IS	13C10-Heptachlor	96.5	5 - 120	
Aldrin	43.8			IS	13C12-Aldrin	48.7	5 - 120	
Oxychlordane	ND 102	2		IS	13C10-Oxychlordane	63.2	23 - 135	
cis-Heptachlor Epoxide	293			IS	13C10-cis-Heptachlor Epoxide	55.1	27 - 137	
trans-Heptachlor Epoxide	1020			IS	13C10-trans-Chlordane (gamma) 43.6	21 - 132	
trans-Chlordane (gamma)	1840			IS	13C10-trans-Nonachlor	45.9	14 - 136	
trans-Nonachlor	1040			IS	13C9-Endosulfan I (alpha)	45.8	15 - 148	
cis-Chlordane (alpha)	2820			IS	13C12-2,4'-DDE	44.2	47 - 160	Н
Endosulfan I (alpha)	ND 152	2		IS	13C12-4,4'-DDE	33.6	47 - 160	Н
2,4'-DDE	693			IS	13C12-Dieldrin	36.7	40 - 151	Н
4,4'-DDE	9860			IS	13C12-Endrin	33.5	35 - 155	Н
Dieldrin	3670			IS	13C10-cis-Nonachlor	25.0	36 - 139	Н
Endrin	651			IS	13C9-Endosulfan II (beta)	34.3	5 - 122	
cis-Nonachlor	294			IS	13C12-2,4'-DDD	37.1	5 - 199	
Endosulfan II (beta)	ND 32:	5		IS	13C12-2,4'-DDT	26.4	5 - 199	
2,4'-DDD	4960			IS	13C12-4,4'-DDD	25.9	5 - 120	
2,4'-DDT	3860			IS	13C12-4,4'-DDT	20.4	5 - 120	
4,4'-DDD	10400			IS	13C9-Endosulfan Sulfate	21.4	15 - 148	
4,4'-DDT	10800			IS	13C12-Methoxychlor	15.7	5 - 120	
Endosulfan Sulfate	ND 43'	7		IS	13C10-Mirex	18.6	5 - 120	
4,4'-Methoxychlor	ND 114	0		IS	13C12-Endrin Aldehyde	20.0	15 - 148	
Mirex	ND 67.	3		IS	13C12-Endrin Ketone	15.6	15 - 148	
Endrin Aldehyde	ND 160	ó						
Endrin Ketone	ND 498	3						
DI - Sample specife estimated	11				I Lawer control limit upper control limit			

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

Work Order 1900109 Page 8 of 14

DATA QUALIFIERS & ABBREVIATIONS

B This compound was also detected in the method blank

Conc. Concentration

D Dilution

DL Detection limit

E The associated compound concentration exceeded the calibration range of the

instrument

H Recovery and/or RPD was outside laboratory acceptance limits

I Chemical Interference

J The amount detected is below the Reporting Limit/LOQ

LOD Limits of Detection

LOQ Limits of Quantitation

M Estimated Maximum Possible Concentration (CA Region 2 projects only)

NA Not applicable

ND Not Detected

P The reported concentration may include contribution from chlorinated diphenyl

ether(s).

Q Ion ratio outside of 70-130% of Standard Ratio.

TEQ Toxic Equivalency

U Not Detected (specific projects only)

* See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

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Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number		
Alaska Department of Environmental Conservation	17-013		
Arkansas Department of Environmental Quality	19-013-0		
California Department of Health – ELAP	2892		
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01		
Florida Department of Health	E87777		
Hawaii Department of Health	N/A		
Louisiana Department of Environmental Quality	01977		
Maine Department of Health	2018017		
Michigan Department of Environmental Quality	9932		
Minnesota Department of Health	1521520		
New Hampshire Environmental Accreditation Program	207718		
New Jersey Department of Environmental Protection	CA003		
New York Department of Health	11411		
Oregon Laboratory Accreditation Program	4042-009		
Pennsylvania Department of Environmental Protection	015		
Texas Commission on Environmental Quality	T104704189-18-9		
Virginia Department of General Services	9618		
Washington Department of Ecology	C584-18		
Wisconsin Department of Natural Resources	998036160		

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

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NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA 23
Dibenzofurans	
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA TO-9A
Dibenzofurans	

MATRIX: Biological Tissue							
Description of Test	Method						
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B						
Dilution GC/HRMS							
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A						
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue	EPA 1668A/C						
by GC/HRMS							
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by	EPA 1699						
HRGC/HRMS							
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537						
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by	EPA 8280A/B						
GC/HRMS							
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA						
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A						

MATRIX: Drinking Water							
Description of Test	Method						
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA						
	1613/1613B						
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522						
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537						
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009						

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MATRIX: Non-Potable Water							
Description of Test	Method						
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B						
Dilution GC/HRMS							
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A						
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue	EPA 1668A/C						
by GC/HRMS							
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699						
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537						
Dioxin by GC/HRMS	EPA 613						
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated	EPA 8280A/B						
Dibenzofurans by GC/HRMS							
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA						
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A						

MATRIX: Solids							
Description of Test	Method						
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613						
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B						
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A						
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C						
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699						
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537						
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated	EPA 8280A/B						
Dibenzofurans by GC/HRMS							
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA						
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A						

Work Order 1900109 Page 12 of 14



CHAIN OF CUSTODY RECORD

1900109 0.5°C

	***************************************																1 .0	010	015	
LABORATO	DRY:	INSTRUCTIONS FOR	LAB PERSO	NNEL:			Analysis	Turnaro	ud Time	XS	Standar	d o	Other			-				
Vista Analyt 1104 Windfi (916) 673-1	eld Way, El Dorado Hills CA 95762	Please send analytic in the original chain-of-contact bas@cdimengineering.co	ustody form to	0:			LOCUS	cker EDF EDD req Results to	uired?)		No	otify us of	any anoma		ection limit in repor SC or other scans. problems.	
Karen Volpe	endesta	sab@cdimengineering.c	om				Report s	oil result	s to:	□ wet v	veight ((total)	n dry	weight			21.0			
CDIM CON	TACT:	Project Manager:	Bryan Starks	3						Al	NALY	SIS RE	QUEST	ED			9 9	С	OC Number:	
CDIM Engin	eering	Phone Number	415-498-053	35																
45 Polk Stre	et, 3rd Floor	Sampled by:								1									(2	
San Francis	co, California 94102	Sample date(s):												1 1				Page	e of	
A TOTAL TOTA	NFORMATION									1										
Job Name:	LRTC 2018-2019 Industrial Stormwater					1699)													SDG number:	
Job #:	101-003, Task 1					(EPA 1699)														
Address:	402 Wright Avenue, Richmond CA 94804					ides	1 1											-		
Lab ID	Sample Identification	Sample Date	Sample Time	Sample Matrix	# of Cont.	Pesticides												Samp	le Specific Notes	
	TS2-I-190111	1/11/2019	1605	w	3	X														
									-1											
				THE																
											4.0			AL.						
	3																			
				Field Fill	tered (X):						1									
Prese	ervation Used: 1= Ice, 2= HCI; 3= H ₂ SO ₄ ;	4=HNO ₃ ; 5=NaOH; 6= Oth	er		_	1	1-1-													
Special Ins	structions/QC Requirements & Co		ort. Report	with repor	ting limit	and	method	detect	ion lin	nit. An	alyze	and re	eport o	nly the	meta	ls listed	above.			
Relinquished I	has to	Company:		Date/Time:	2031	Rece	eived by:	En	20				0	Compan	iy:			Date/Time:	6754	
Relinquished by: Date/Time:			Rece	eived by:						0	Compan	ıy:			Date/Time:					
Relinquished I	py:	Company:		Date/Time:		Rece	eived by:						0	Compan	ıy:			Date/Time:		
	x = Samples released to a secured, I	ocked area.					•	= Sample	es receiv	ed from	a secu	ured, loc	ked area							
	SAMPLERS NAME	Fran Star	LS						MOBIL	E#		809	\$ 2	256	9	230				
	SAMPLERS SIGNATURE	/me	8						DATE /	TIME	1	/11	110	1		2031				
																		-		_



Sample Log-In Checklist

Vista Work Orde	er#:(70	010)9		Page #		of	-	
Samples Date/Time		07		Initials:		Location: WE-Z Shelf/Rack:NA				
Logged In:	Date/Time	ate/Time 14/19 0830		Initials:		Location: (
Delivered By:	FedEx UP	S	On Trac	GSO	DHL	Hano		Other		
Preservation:	lce	ce Blue Ice Dry Ice						No	ne	
Temp °C: (), 6	_	Pro	be used	d: Y /N	>	Thermomet	er ID:	Hey		
							YES	NO	NA	
Adequate Sampl	e Volume Recei	ved?					1			
Holding Time Ac	ceptable?						1			
Shipping Contain	ner(s) Intact?						1		Ŧ.	
Shipping Custod	Shipping Custody Seals Intact?									
Shipping Docum	entation Present	?					/			
Airbill F.O.	Trk # 7	849	3524	8170)		1			
Sample Containe	er Intact?						1			

Shipping Container Vista Client Retain

If Chlorinated or Drinking Water Samples, Acceptable Preservation?

Other

Na₂S₂O₃

Trizma

Chain of Custody / Sample Documentation Present?

COC Anomaly/Sample Acceptance Form completed?

ID.: LR - SLC

Sample Custody Seals Intact?

Preservation Documented:

Rev No.: 3

Rev Date: 05 October 2018

None

Page: 1 of 1

Yes

Return

Comments:

NA

No

Dispose



ANALYTICAL REPORT

February 11, 2019

CDIM Engineering - San Francisco, CA

Sample Delivery Group: L1066144

Samples Received: 02/01/2019

Project Number: 101-003 TASK 1

Description: LRTC 2018-2019 Industrial Stormwater

Report To: Mary Cunningham

45 Polk Street

3rd Floor

San Francisco, CA 94102

Entire Report Reviewed By:

Buar Ford

Brian Ford Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



Cp: Cover Page		1
Tc: Table of Con	ntents	2
Ss: Sample Sum	mary	3
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TS2-E-190131	L1066144-02	6
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TS4-E-190131	L1066144-04	8
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Sc: Sample Chai	18	





















	SAMPLE SU	JMMAF	AO	ONE LAB. NATIONWIDE.		
TS1-E-190131 L1066144-01 WW			Collected by	Collected date/time 01/31/19 08:00	Received date/time 02/01/19 08:45	
Method	Batch	Dilution	Preparation	Analysis	Analyst	
			date/time	date/time		
Gravimetric Analysis by Method 2540 D-2011	WG1231948	1	02/05/19 12:51	02/05/19 13:32	AEC	
Wet Chemistry by Method 1664A	WG1233342	1	02/06/19 08:27	02/06/19 16:51	DAD	
Wet Chemistry by Method 4500H+ B-2011	WG1231870	1	02/03/19 09:22	02/03/19 09:22	TH	
Metals (ICPMS) by Method 200.8	WG1231915	1	02/04/19 15:07	02/05/19 14:42	JPD	
TS2-E-190131 L1066144-02 WW			Collected by	Collected date/time 01/31/19 08:35	Received date/time 02/01/19 08:45	
Method	Batch	Dilution	Preparation	Analysis	Analyst	
			date/time	date/time		
Gravimetric Analysis by Method 2540 D-2011	WG1231948	1	02/05/19 12:51	02/05/19 13:32	AEC	
Wet Chemistry by Method 1664A	WG1233342	1	02/06/19 08:27	02/06/19 16:51	DAD	
Wet Chemistry by Method 4500H+ B-2011	WG1231870	1	02/03/19 09:22	02/03/19 09:22	TH	
Metals (ICPMS) by Method 200.8	WG1231915	1	02/04/19 15:07	02/05/19 14:47	JPD	
TS3-E-190131 L1066144-03 WW			Collected by	Collected date/time 01/31/19 09:05	Received date/time 02/01/19 08:45	
Method	Batch	Dilution	Preparation	Analysis	Analyst	
			date/time	date/time		
Gravimetric Analysis by Method 2540 D-2011	WG1231948	1	02/05/19 12:51	02/05/19 13:32	AEC	
Wet Chemistry by Method 1664A	WG1233342	1	02/06/19 08:27	02/06/19 16:51	DAD	
Wet Chemistry by Method 4500H+ B-2011	WG1231870	1	02/03/19 09:22	02/03/19 09:22	TH	
Metals (ICPMS) by Method 200.8	WG1231915	1	02/04/19 15:07	02/05/19 14:51	JPD	
TS4-E-190131 L1066144-04 WW			Collected by	Collected date/time 01/31/19 09:40	Received date/time 02/01/19 08:45	
Method	Batch	Dilution	Preparation	Analysis	Analyst	
			date/time	date/time		
Gravimetric Analysis by Method 2540 D-2011	WG1231948	1	02/05/19 12:51	02/05/19 13:32	AEC	
Wet Chemistry by Method 1664A	WG1233342	1	02/06/19 08:27	02/06/19 16:51	DAD	
Wet Chemistry by Method 4500H+ B-2011	WG1231870	1	02/03/19 09:22	02/03/19 09:22	TH	
Metals (ICPMS) by Method 200.8	WG1231915	1	02/04/19 15:07	02/05/19 14:56	JPD	
TSX-E-190131 L1066144-05 WW			Collected by	Collected date/time 01/31/19 09:05	Received date/time 02/01/19 08:45	
Method	Batch	Dilution	Preparation	Analysis	Analyst	
			date/time	date/time		
Gravimetric Analysis by Method 2540 D-2011	WG1231948	1	02/05/19 12:51	02/05/19 13:32	AEC	
Gravimetric Analysis by Method 2540 D-2011	WG1234743	1	02/09/19 12:32	02/09/19 12:54	AJS	
Wet Chemistry by Method 1664A	WG1233342	1	02/06/19 08:27	02/06/19 16:51	DAD	
Wet Chemistry by Method 4500H+ B-2011	WG1234767	1	02/09/19 12:15	02/09/19 12:15	MLW	
M + 1 ((CDMC) M + 1 1000 0	11101001015	_	00/04/40 45 07	00/04/40 00 40		



















CDIM Engineering - San Francisco, CA

Metals (ICPMS) by Method 200.8

WG1231915

02/04/19 15:07

02/04/19 23:42

LAT

















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford Project Manager

Buar Ford

ONE LAB. NATIONWIDE.

Collected date/time: 01/31/19 08:00

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	U		350	2500	1	02/05/2019 13:32	WG1231948



Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		797	5490	1	02/06/2019 16:51	WG1233342



Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	su			date / time	
рН	7.79	<u>T8</u>	1	02/03/2019 09:22	WG1231870



Cn

Sample Narrative:

L1066144-01 WG1231870: 7.79 at 15.4C



Gl

Metals (ICPMS) by Method 200.8

	, ,						
	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	35.1	<u>J</u>	20.0	100	1	02/05/2019 14:42	WG1231915
Iron	19.9	J	15.0	100	1	02/05/2019 14:42	WG1231915
Lead	0.845	J	0.260	1.00	1	02/05/2019 14:42	WG1231915
Zinc	44.6		1.91	10.0	1	02/05/2019 14:42	WG1231915



CDIM Engineering - San Francisco, CA

ONE LAB. NATIONWIDE.

Collected date/time: 01/31/19 08:35

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	800	J	350	2500	1	02/05/2019 13:32	WG1231948

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	1010	J	815	5620	1	02/06/2019 16:51	WG1233342



Ss

Cn

Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	SU			date / time	
рН	7.86	T8	1	02/03/2019 09:22	WG1231870



Sample Narrative:

L1066144-02 WG1231870: 7.86 at 15.8C

СQс

Gl

Metals (ICPMS) by Method 200.8

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	41.3	<u>J</u>	20.0	100	1	02/05/2019 14:47	WG1231915
Iron	242		15.0	100	1	02/05/2019 14:47	WG1231915
Lead	0.966	<u>J</u>	0.260	1.00	1	02/05/2019 14:47	WG1231915
Zinc	61.7		1.91	10.0	1	02/05/2019 14:47	WG1231915



ΆΙ

ONE LAB. NATIONWIDE.

Collected date/time: 01/31/19 09:05

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch	
Analyte	ug/l		ug/l	ug/l		date / time		
Suspended Solids	U		350	2500	1	02/05/2019 13:32	WG1231948	





	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		833	5750	1	02/06/2019 16:51	WG1233342



Ss

Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	Su			date / time	
рН	7.41	<u>T8</u>	1	02/03/2019 09:22	WG1231870



Sample Narrative:

L1066144-03 WG1231870: 7.41 at 16.5C

Gl



³Sc

Metals (ICPMS) by Method 200.8

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	22.5	J	20.0	100	1	02/05/2019 14:51	WG1231915
Iron	94.1	J	15.0	100	1	02/05/2019 14:51	WG1231915
Lead	2.91		0.260	1.00	1	02/05/2019 14:51	WG1231915
Zinc	64.6		1.91	10.0	1	02/05/2019 14:51	WG1231915

ONE LAB. NATIONWIDE.

Collected date/time: 01/31/19 09:40

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	820	J	361	2580	1	02/05/2019 13:32	WG1231948

Wet Chemistry by Method 1664A Ss

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>	
Analyte	ug/l		ug/l	ug/l		date / time		4
TPH - Oil & Grease	U		780	5380	1	02/06/2019 16:51	WG1233342	



Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	Su			date / time	
рН	7.51	<u>T8</u>	1	02/03/2019 09:22	WG1231870



Sample Narrative:

L1066144-04 WG1231870: 7.51 at 17.1C

Gl

ΆΙ

Metals (ICPMS) by Method 200.8

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	U		20.0	100	1	02/05/2019 14:56	WG1231915
Iron	233		15.0	100	1	02/05/2019 14:56	WG1231915
Lead	0.555	<u>J</u>	0.260	1.00	1	02/05/2019 14:56	WG1231915
Zinc	34.0		1.91	10.0	1	02/05/2019 14:56	WG1231915



Sample Narrative:

SAMPLE RESULTS - 05

ONE LAB. NATIONWIDE.

Collected date/time: 01/31/19 09:05

Gravimetric Analysis by Method 2540 D-2011

L1066144-05 WG1234743: Duplicate analysis performed out of hold.

Wet Chemistry by Method 4500H+ B-2011

Result

SU

7.10

Qualifier

<u>T8</u>

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	U		350	2500	1	02/05/2019 13:32	WG1231948
Suspended Solids	U	<u>T8</u>	777	5550	1	02/09/2019 12:54	WG1234743





Ss

Cn















Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		833	5750	1	02/06/2019 16:51	WG1233342

Batch

WG1234767

Dilution Analysis

1

 $\mathsf{date}\,/\,\mathsf{time}$

02/09/2019 12:15

Sample Narrative:

Analyte

рΗ

L1066144-05 WG1234767: 7.1 at 10.5C.

Metals (ICPMS) by Method 200.8

	,						
	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	U		20.0	100	1	02/04/2019 23:42	WG1231915
Iron	75.7	<u>J</u>	15.0	100	1	02/04/2019 23:42	WG1231915
Lead	2.95		0.260	1.00	1	02/04/2019 23:42	WG1231915
Zinc	68.8		1.91	10.0	1	02/04/2019 23:42	WG1231915

ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 D-2011

L1066144-01,02,03,04,05

Method Blank (MB)

(MB) R3381465-1 02/05/19	9 13:32			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Suspended Solids	U		350	2500







	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Suspended Solids	87000	84000	1	3.51		5







(OS) L1066157-01 02/05/19 13:32 • (DUP) R3381465-4 02/05/19 13:32

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Suspended Solids	122000	117000	1	4.18		5





Laboratory Control Sample (LCS)

(LCS) R3381465-2 02/05/19 13:32

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Suspended Solids	773000	856000	111	85.0-115	

02/11/19 14:27

ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 D-2011

L1066144-05

Method Blank (MB)

(MB) R3382529-1 02/09/19 12:54 MB RDL MB Result MB Qualifier MB MDL Analyte ug/l ug/l ug/l Suspended Solids U 350 2500



Ss

L1066144-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1066144-05 02/09/19 12:54 • (DUP) R3382529-3 02/09/19 12:54

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Suspended Solids	U	0.000	1	0.000		5





Sample Narrative:

OS: Duplicate analysis performed out of hold.



Laboratory Control Sample (LCS)

(LCS) R3382529-2 02/09/19 12:54

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Suspended Solids	773000	820000	106	85 0-115	



CDIM Engineering - San Francisco, CA

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 1664A

L1066144-01,02,03,04,05

Method Blank (MB)

 MB R3381744-1
 02/06/19 16:51

 MB Result
 MB Qualifier
 MB MDL
 MB RDL

 Analyte
 ug/l
 ug/l
 ug/l

 TPH - Oil & Grease
 U
 725
 5000









(LCS) R3381744-2 02/06/19 16:51 • (LCSD) R3381744-3 02/06/19 16:51

,	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
TPH - Oil & Grease	20000	19100	20000	95.5	100	64.0-132			4.60	34





⁶Qc



(OS) L1066144-05 02/06/19 16:51 • (MS) R3381744-4 02/06/19 16:51 • (MSD) R3381744-5 02/06/19 16:51

, ,	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
TPH - Oil & Grease	20000	U	18500	18600	92.6	93.1	1	64.0-132			0.539	34







ONE LAB. NATIONWIDE.

Wet Chemistry by Method 4500H+ B-2011

L1066144-01,02,03,04

L1065989-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1065989-04 02/03/19 09:22 • (DUP) R3380816-2 02/03/19 09:22

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	SU		%		%
рН	6.70	6.71	1	0.149		1



Sample Narrative:

OS: 6.7 at 17.4C DUP: 6.71 at 17.3C



Ss

L1066202-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1066202-01 02/03/19 09:22 • (DUP) R3380816-3 02/03/19 09:22

Analyte su su % %



Sample Narrative:

OS: 7.34 at 16.5C DUP: 7.36 at 16.5C



Laboratory Control Sample (LCS)

(LCS) R3380816-1 02/03/19 09:22

Sample Narrative:

LCS: 9.98 at 19.1C

13 of 20

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 4500H+ B-2011

L1066144-05

L1066144-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1066144-05 02/09/19 12:15 • (DUP) R3382428-2 02/09/19 12:15

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
рН	7.10	7.10	1	0.000		1



Sample Narrative:



OS: 7.1 at 10.5C. DUP: 7.1 at 10.9C



Laboratory Control Sample (LCS)

(LCS) R3382428-1 02/09/19 12:15



Sample Narrative:

LCS: 9.97 at 17.7C





ONE LAB. NATIONWIDE.

Metals (ICPMS) by Method 200.8

L1066144-01,02,03,04,05

Method Blank (MB)

(MB) R3381258-1 02/04/19 23:11

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Aluminum	U		20.0	100
Iron	U		15.0	100
Lead	U		0.260	1.00
Zinc	U		1.91	10.0



¹Cp







Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3381258-2 02/04/19 23:15 • (LCSD) R3381258-3 02/04/19 23:20

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Aluminum	5000	4740	4770	94.8	95.4	85.0-115			0.591	20
Iron	5000	4740	4760	94.7	95.1	85.0-115			0.386	20
Lead	50.0	47.2	48.4	94.4	96.8	85.0-115			2.55	20
Zinc	50.0	49.8	50.6	99.6	101	85.0-115			1.62	20

⁶OC







Al



 $(OS) \, L1066091 - O1 \, \, 02/04/19 \, \, 23:24 \bullet (MS) \, R3381258 - 5 \, \, 02/04/19 \, \, 23:33 \bullet (MSD) \, R3381258 - 6 \, \, 02/04/19 \, \, 23:38 + (MSD) \, (M$

(,			_, _ ,, ,,	(
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Aluminum	5000	354	5250	5260	97.9	98.1	1	70.0-130			0.207	20
Iron	5000	500	5270	5290	95.4	95.9	1	70.0-130			0.431	20
Lead	50.0	ND	48.6	49.3	95.7	97.0	1	70.0-130			1.39	20
Zinc	50.0	11.6	60.5	62.3	98.0	102	1	70.0-130			2.92	20

L1066144-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1066144-05 02/04/19 23:42 • (MS) R3381258-7 02/04/19 23:47 • (MSD) R3381258-8 02/04/19 23:52

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Aluminum	5000	U	4820	4980	96.5	99.6	1	70.0-130			3.18	20
Iron	5000	75.7	4790	5010	94.3	98.6	1	70.0-130			4.41	20
Lead	50.0	2.95	51.6	54.3	97.4	103	1	70.0-130			5.02	20
Zinc	50.0	68.8	117	119	96.9	100	1	70.0-130			1.30	20

GLOSSARY OF TERMS

GLUSSART OF TERMS

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not

Ср

not















intended as a comprehensive explanation, and if you have additional questions please contact your project representative. Abbreviations and Definitions

Guide to Reading and Understanding Your Laboratory Report

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL"

Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.

(Radiochemistry)	Confidence level of 2 sigma.
	A brief discussion about the i

A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
This section of the report includes the results of the laboratory quality control analyses required by procedure or

analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not

Summary (Qc)	
Sample Chain of	

Case Narrative (Cn)

Quality Control

Custody (Sc)

being performed on your samples typically, but on laboratory generated material.

This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.

Sample Results (Sr)

This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.

Sample Summary (Ss)

This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	
A2LA - ISO 17025 5	1461.02	
Canada	1461.01	
EPA-Crypto	TN00003	

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















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CHAIN OF CUSTODY RECORD

H220

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(615) 773-9 Brian Ford	anon Road, Mt. Juliet, TN 37122 1772	Please send analytic the original chain-of-c bas@cdmengineering c sab@cdmengineering c	results, electroustody form to om, medicide	onic deliver		į	Geo LOC Repr	Tracki US EI ort Re	or EDF re OD requir sults to:	red?	Yes	res X No MDL	X Na	dry wei	aht	Notify	us of any ar	rep method and dete nomalous peaks in G with any questions or	C or other scans	ort. s.
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PROJECT	INFORMATION				- 10		(S)	8	72							1 3				
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						-	Sp	PA	F. F. MS							1 1			SDG number:	
Job#:	101-003, Task 1					4500HB)	epu	(H)	ICP.							1 1		1		
Address:	402 Wright Avenue, Richmond CA 9480	14					Suspended Solids (SM 2540D)	688	Metal 200 B									106	6144	1
Lab ID	Sample Identification	Sample Date	Sample	Sample	# of Cont.	MS) Hd	Total S	Oll & Grease (EPA 1864A SGT-HEM)	Total M (EPA 2)										ple Specific Not	_
	TS1-E-190130	1/30/2019	800	W	5	X	X	X	X		1	1			+	11			100	200
	TS2-E-190130	1/30/2019	835	W	5	X	X	X	x		7						-	17		-01
	TS3-E-190130	1/30/2019	905	w	8	X	X	X	x	_	1	+			+					02
	TS4-E-190130	1/34/2019	935	w	5	X	X	X	X		+	-	-		+	+-	-			03
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	TSX-E-19013	1/3 /2019	905	W	89 AF	X	X	X	X		-							Perform MS/MS provided	D using additional y	volume C
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	ervation Used: 1= ice, 2= HCI; 3= H ₂ SC				_ 31	1	1		1,4		9				17			4.5.2		
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Pace Analytical National Cen Cooler Rec		ation	
Client: COIENGSFCA	SDG#:	1000	144
Cooler Received/Opened On: 02/ 1 /19	Temperature:	0.4	387.5
Received By: Brock Fariss		011	-24.6
Signature: MK Fairs			
Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	1 6 - 1 - 1	103	140
COC Signed / Accurate?			Section 1
Bottles arrive intact?	- W		
Correct bottles used?			
Sufficient volume sent?	AND THE PROPERTY.		
If Applicable		-	
VOA Zero headspace?			
Preservation Correct / Checked?		-	
		-	



ce (check applicable items) tholding tholding Login Clarification Needed th Chain of custody is incomplete Please specify Metals requested. Please specify TCLP requested. Received additional samples not fisted on coc. Sample ids on containers do not match ids on coc. Trip Biank not received. Chain of Custody is missing remains	Login #:L1066144 C	Client:CDIENGSFCA	Date:02/1	Evaluated by:Kelsey S
dy Clarification on Needed v is incomplete Aetals requested. CLP requested. onal samples not listed on coc. ontainers do not match ids on received. X' analysis.	Non-Conformance (chec	ck applicable items]		
in Chain of custody is incomplete Chain of custody is incomplete Please specify Metals requested. Please specify TCLP requested. Received additional samples not listed on coc. Sample ids on containers do not match ids on coc. Trip Blank not received. Client did not "X" analysis. Chain of Custody is missing.	Sample Integrity	Chain of Custody Clarific	ation	
ner Chain of custody is incomplete ner Please specify Metals requested. Please specify TCLP requested. Received additional samples not listed on coc. Sample ids on containers do not match ids on coc. Trip Blank not received. Trip Blank not received. Chain of Custody is missing.	Parameter(s) past holding time	x Login Clarification Needer		If Broken Container:
ner Please specify Metals requested. Please specify TCLP requested. Received additional samples not listed on coc. Sample ids on containers do not match ids on coc. Trip Blank not received. Trip Blank not received. Client did not "X" analysis. er Chain of Custody is missing.	Temperature not in range	Chain of custody is incom	olete	Insufficient packing material around container
ple volume. Received additional samples not listed on coc. Sample ids on containers do not match ids on coc. Trip Blank not received. Client did not "X" analysis. Trip Chain of Custody is missing.	Improper container	Please specify Metals requ	ested.	Insufficient packing material inside cooler
ple volume. Sample ids on containers do not match ids on cocococococococococococococococococo	off not in range.	Please specify TCLP reque	sted.	Improper handling by carrier (FedEx / UPS / Couri
coc Trip Blank not received. Client did not "X" analysis. Chain of Custody is missing	Insufficient sample volume.		les not listed on coc.	Sample was frozen
Trip Blank not received. Client did not "X" analysis. Chain of Custody is missing	Sample is biphasic,		do not match ids on	Container lid not intact
Chain of Custody is missing	Vials received with headspa			If no Chain of Custody:
Chain of Custody is missing	Broken container	Client did not "X" analysis		Received by:
	Broken container:	Chain of Custody is missir	5.0	Date/Time:
Carrier, Tracking#	Sufficient sample remains			Temp./Cont. Rec./pH:
Tracking#				Carrier;
				Tracking#

Login Comments:TS4-E-190131 received with a time of 0940 on containers but COC states 0935, Currently logged per COC.

Lient informed by:	Call	Email X	Voice Mail	Date: 02/04/19	Time:1145
SR Initials:bif	Client Cont	act: Bryan Stark	52		

Login Instructions:

Times listed on containers are correct.



ANALYTICAL REPORT

February 08, 2019

CDIM Engineering - San Francisco, CA

Sample Delivery Group: L1066157

Samples Received: 02/01/2019

Project Number: 101-003 TASK 1

Description: LRTC 2018-2019 Industrial Stormwater

Report To: Mary Cunningham

45 Polk Street

3rd Floor

San Francisco, CA 94102

Entire Report Reviewed By:

Buar Ford

Brian Ford Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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Al: Accreditations & Locations	14
Sc: Sample Chain of Custody	15





















			Collected by	Collected date/time	Received date/time
TS1-I-190131 L1066157-01 WW				01/31/19 07:55	02/01/19 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1231948	1	02/05/19 12:51	02/05/19 13:32	AEC
Wet Chemistry by Method 1664A	WG1233342	1	02/06/19 08:27	02/06/19 16:51	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1231870	1	02/03/19 09:22	02/03/19 09:22	TH
Metals (ICPMS) by Method 200.8	WG1231915	1	02/04/19 15:07	02/05/19 15:01	JPD
			Collected by	Collected date/time	Received date/time
TS2-I-190131 L1066157-02 WW				01/31/19 08:25	02/01/19 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1231948	1	02/05/19 12:51	02/05/19 13:32	AEC
Wet Chemistry by Method 1664A	WG1233342	1	02/06/19 08:27	02/06/19 16:51	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1231870	1	02/03/19 09:22	02/03/19 09:22	TH
Metals (ICPMS) by Method 200.8	WG1231915	1	02/04/19 15:07	02/05/19 15:05	JPD
			Collected by	Collected date/time	Received date/time
TS3-I-190131 L1066157-03 WW				01/31/19 09:00	02/01/19 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1231948	1	02/05/19 12:51	02/05/19 13:32	AEC
Wet Chemistry by Method 1664A	WG1233342	1	02/06/19 08:27	02/06/19 16:51	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1231870	1	02/03/19 09:22	02/03/19 09:22	TH
Metals (ICPMS) by Method 200.8	WG1231915	1	02/04/19 15:07	02/05/19 15:10	JPD
			Collected by	Collected date/time	Received date/time
TS4-I-190131 L1066157-04 WW				01/31/19 09:35	02/01/19 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 D-2011	WG1231948	1	02/05/19 12:51	02/05/19 13:32	AEC
Wet Chemistry by Method 1664A	WG1233342	1	02/06/19 08:27	02/06/19 16:51	DAD
Wet Chemistry by Method 4500H+ B-2011	WG1231870	1	02/03/19 09:22	02/03/19 09:22	TH
Motole (ICDMC) by Mothed 200.0	WC122101F	4	00/04/10 15:07	02/05/10 15:15	IDD

WG1231915



















Metals (ICPMS) by Method 200.8

02/04/19 15:07

1

02/05/19 15:15

JPD

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

3















Brian Ford Project Manager

Buar Ford

ONE LAB. NATIONWIDE.

Collected date/time: 01/31/19 07:55

L1066157

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	122000		3500	25000	1	02/05/2019 13:32	WG1231948



Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	980	<u>J</u>	884	6100	1	02/06/2019 16:51	WG1233342



Cn

Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	Su			date / time	
рН	8.42	<u>T8</u>	1	02/03/2019 09:22	WG1231870



Sample Narrative:

L1066157-01 WG1231870: 8.42 at 17.3C

СQс Gl

Metals (ICPMS) by Method 200.8

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	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	2700		20.0	100	1	02/05/2019 15:01	WG1231915
Iron	9250		15.0	100	1	02/05/2019 15:01	WG1231915
Lead	203		0.260	1.00	1	02/05/2019 15:01	WG1231915
Zinc	932		1.91	10.0	1	02/05/2019 15:01	WG1231915



ΆΙ

CDIM Engineering - San Francisco, CA

ONE LAB. NATIONWIDE.

Collected date/time: 01/31/19 08:25

L1066157

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	55000		1750	12500	1	02/05/2019 13:32	WG1231948

²TC

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		806	5560	1	02/06/2019 16:51	WG1233342



Cn

Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	Su			date / time	
рН	7.65	<u>T8</u>	1	02/03/2019 09:22	WG1231870



Sample Narrative:

L1066157-02 WG1231870: 7.65 at 17.6C

⁶Qc

Gl

Metals (ICPMS) by Method 200.8

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	318		20.0	100	1	02/05/2019 15:05	WG1231915
Iron	969		15.0	100	1	02/05/2019 15:05	WG1231915
Lead	8.89		0.260	1.00	1	02/05/2019 15:05	WG1231915
Zinc	87.1		1.91	10.0	1	02/05/2019 15:05	WG1231915





ONE LAB. NATIONWIDE.

Collected date/time: 01/31/19 09:00

L1066157

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	58000		501	3580	1	02/05/2019 13:32	WG1231948

²T₀

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	6320		833	5750	1	02/06/2019 16:51	WG1233342



Cn

Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	SU			date / time	
рН	7.59	T8	1	02/03/2019 09:22	WG1231870



Sample Narrative:

L1066157-03 WG1231870: 7.59 at 17.6C

⁷Gl

Metals (ICPMS) by Method 200.8

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l	· <u> </u>	ug/l	ug/l		date / time	
Aluminum	1130		20.0	100	1	02/05/2019 15:10	WG1231915
Iron	2780		15.0	100	1	02/05/2019 15:10	WG1231915
Lead	98.3		0.260	1.00	1	02/05/2019 15:10	WG1231915
Zinc	175		1.91	10.0	1	02/05/2019 15:10	WG1231915



ONE LAB. NATIONWIDE.

Collected date/time: 01/31/19 09:35

Gravimetric Analysis by Method 2540 D-2011

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Suspended Solids	4880		438	3130	1	02/05/2019 13:32	WG1231948

<u>Ср</u>

Wet Chemistry by Method 1664A

	Result	Qualifier	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l	ug/l		date / time	
TPH - Oil & Grease	U		771	5320	1	02/06/2019 16:51	WG1233342



Wet Chemistry by Method 4500H+ B-2011

	Result	Qualifier	Dilution	Analysis	Batch
Analyte	SU			date / time	
рН	7.26	T8	1	02/03/2019 09:22	WG1231870



Sample Narrative:

L1066157-04 WG1231870: 7.26 at 17.9C

⁷Gl

Metals (ICPMS) by Method 200.8

	, ,						
	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l	ug/l		date / time	
Aluminum	74.3	<u>J</u>	20.0	100	1	02/05/2019 15:15	WG1231915
Iron	767		15.0	100	1	02/05/2019 15:15	WG1231915
Lead	2.72		0.260	1.00	1	02/05/2019 15:15	WG1231915
Zinc	121		1.91	10.0	1	02/05/2019 15:15	WG1231915





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Gravimetric Analysis by Method 2540 D-2011

L1066157-01,02,03,04

Method Blank (MB)

 (MB) R3381465-1
 02/05/19
 13:32

 MB Result
 MB Qualifier
 MB MDL
 MB RDL

 Analyte
 ug/l
 ug/l
 ug/l

 Suspended Solids
 U
 350
 2500



L1066021-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1066021-01 02/05/19 13:32 • (DUP) R3381465-3 02/05/19 13:32

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Suspended Solids	87000	84000	1	3.51		5



⁵S



L1066157-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1066157-01 02/05/19 13:32 • (DUP) R3381465-4 02/05/19 13:32

(00, 2.000.07 0. 02,00,10	Original Result			DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Suspended Solids	122000	117000	1	4.18		5



⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3381465-2 02/05/19 13:32

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Suspended Solids	773000	856000	111	85.0-115	

02/08/19 11:31

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 1664A

L1066157-01,02,03,04

Method Blank (MB)

(MB) R3381744-1 02/06/19 16:51 MB RDL MB Result MB Qualifier MB MDL Analyte ug/l ug/l ug/l TPH - Oil & Grease 725 5000







Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3381744-2 02/06/19 16:51 • (LCSD) R3381744-3 02/06/19 16:51

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
TPH - Oil & Grease	20000	19100	20000	95.5	100	64.0-132			4.60	34





L1066144-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1066144-05 02/06/19 16:51 • (MS) R3381744-4 02/06/19 16:51 • (MSD) R3381744-5 02/06/19 16:51

(11)	, ,	Original Result		MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%	
TPH - Oil & Grease	20000	U	18500	18600	92.6	93.1	1	64.0-132			0.539	34	







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Wet Chemistry by Method 4500H+ B-2011

L1066157-01,02,03,04

L1065989-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1065989-04 02/03/19 09:22 • (DUP) R3380816-2 02/03/19 09:22

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	SU		%		%
рН	6.70	6.71	1	0.149		1







Sample Narrative:

OS: 6.7 at 17.4C DUP: 6.71 at 17.3C





L1066202-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1066202-01_02/03/19_09:22 • (DLIP) R3380816-3_02/03/19_09:22

(03) [1000202-01 02/03/1	Original Result	•			DUP Qualifier	DUP RPD Limits
Analyte	su	SU		%		%
рН	7.34	7.36	1	0.272		1









Laboratory Control Sample (LCS)

(LCS) R3380816-1 02/03/19 09:22

(,	Spike Amount	LCS Result	LCS Rec.	Rec. Limits
Analyte	Su	SU	%	%
На	10.0	9.98	99.8	99.0-101

Sample Narrative:

Sample Narrative: OS: 7.34 at 16.5C DUP: 7.36 at 16.5C

LCS: 9.98 at 19.1C

02/08/19 11:31

ONE LAB. NATIONWIDE.

Metals (ICPMS) by Method 200.8

L1066157-01,02,03,04

Method Blank (MB)

(MB) R3381258-1 0	2/04/19 23:11
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	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Aluminum	U		20.0	100
Iron	U		15.0	100
Lead	U		0.260	1.00
Zinc	U		1.91	10.0







Cn

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3381258-2 02/04/19 23:15 • (LCSD) R3381258-3 02/04/19 23:20

,	,	,								
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Aluminum	5000	4740	4770	94.8	95.4	85.0-115			0.591	20
Iron	5000	4740	4760	94.7	95.1	85.0-115			0.386	20
Lead	50.0	47.2	48.4	94.4	96.8	85.0-115			2.55	20
Zinc	50.0	49.8	50.6	99.6	101	85.0-115			1.62	20









L1066091-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1066091-01 02/04/19 23:24 • (MS) R3381258-5 02/04/19 23:33 • (MSD) R3381258-6 02/04/19 23:38

(***) = *** *** *** *** *** *** *** *** *												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Aluminum	5000	354	5250	5260	97.9	98.1	1	70.0-130			0.207	20
Iron	5000	500	5270	5290	95.4	95.9	1	70.0-130			0.431	20
Lead	50.0	ND	48.6	49.3	95.7	97.0	1	70.0-130			1.39	20
Zinc	50.0	11.6	60.5	62.3	98.0	102	1	70.0-130			2.92	20

L1066144-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1066144-05 02/04/19 23:42 • (MS) R3381258-7 02/04/19 23:47 • (MSD) R3381258-8 02/04/19 23:52

(00) 21000111 00 0210 1/10 20.12 (1/10) 1/10 20.17 (1/10) 1/10 20.17 (1/10)												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Aluminum	5000	U	4820	4980	96.5	99.6	1	70.0-130			3.18	20
Iron	5000	75.7	4790	5010	94.3	98.6	1	70.0-130			4.41	20
Lead	50.0	2.95	51.6	54.3	97.4	103	1	70.0-130			5.02	20
Zinc	50.0	68.8	117	119	96.9	100	1	70.0-130			1.30	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the resureported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

	'
J	The identification of the analyte is acceptable; the reported value is an estimate.
T8	Sample(s) received past/too close to holding time expiration.









Ss











ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana 1	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















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CHAIN OF CUSTODY RECORD

H219

Proceed From Control Security	er scans.	peaks in GC or other suestions or problems.	Specify analytic/prep method Notify us of any anomalous p Call immediately with any qu		er dry wei	n Othe	es X X No MDL	Yes X	quired ed?	EDF re D required uits to	Track US E	G L(c deliverab	ults, electroni ody form to: mec@cdime	INSTRUCTIONS FOR LA Please send analytic resulte original chain-of-cust bas@cdimengineering.com	oad, Mt. Juliet, TN 37122	ABORATORY
DIM CONTACT: Project Manager: bryse values Project Manager: bryse	er:	COC Number:					LYSIS	ANA	0.		ort sc	R	1		-	sab@cdimengineering.com		
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TS1-I-190134 1/38/2019 2.5 W 5 X X X X X X X X X X X X X X X X X	lic Notes:	Sample Specific				+1	1			PA :	0.00	4 (54)	100000000000000000000000000000000000000	100000000000000000000000000000000000000	Sample		Wright Avenue, Richmond CA 34004	Address:
TS2-I-190130 1/38/2019 2.5 W 5 X X X X X X TS3-I-190130 1/38/2019 9.00 W 5 X X X X X X TS3-I-190130 1/38/2019 9.30 W 5 X X X X X X X TS4-I-190130 1/38/2019 9.30 W 5 X X X X X X X TS4-I-190130 1/38/2019 9.30 W 5 X X X X X X X X X X X X X X X X X X	-01		122 mm = 1 = 2							1000	-	-	-	111111111111111111111111111111111111111		Sample Date	Sample Identification	Lab ID
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TS3-I-19013 1/3 1/3 1/3 1/3 1/3 1/3 1/3 1/3 1/3 1	03			-	-	+	+	-		-	-	1		W	825	1/30/2019	S2-I-190130	
TS4-I-190136 1/39/2019 930 W S X X X X X X X X X X X X X X X X X X	04			-	-	1	15	-		X		X	5	W	900	1/30/2019		
Preservation Used: 1= ice, 2= HCI; 3= H ₂ SO ₄ ; 4=HNO ₃ ; 5=NaOH; 6= Other 1	- 1						+			X		X	5	W	930	1/30/2019		
Preservation Used: 1= Ice, 2= HCl; 3= H ₂ SO ₄ ; 4=HNO ₅ ; 5=NaOH; 6= Other 1 1 1,3 1,4													1				- 39	
Preservation Used: 1= Ice, 2= HCl; 3= H ₂ SO ₄ ; 4=HNO ₃ ; 5=NaOH; 6= Other 1 1 1,3 1,4						+	+		-	+	+	-			1		MET .	-11
Preservation Used: 1= Ice, 2= HCl; 3= H ₂ SO ₄ ; 4=HNO ₃ ; 5=NaOH; 6= Other 1 1 1,3 1,4										1	1		Itered (X)	Field Fi				4 1
Preservation Used: 1= Ice, 2= Hct; 3=										3 1,4	,	1			ar .	A THIO A SAMPON OF OTH		
Relinquished by: Relinquished by: Relinquished by: Received by: Company: Date/Time: Received by: Company: Date/Time: Received by: Company: Date/Time: Received by: Received by: Company: Company: Date/Time: Received by: Rece	0.5 mR/h			nly the	port or	and rep	alyze i	mit. An	tion I	detec	tho	t and	rting limi	with repo	ort. Report	mments: Level II Rep	uctions/QC Requirements & Co	Special Ins
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Relinquished by: Relinquished by: Company:		Date/Time:	any:	Compan	-	-			-	-	ed by	Rec	1738	1/3/1/4		Carry	3-15	Kelindulaned
x = Samples released to a secured, locked area. SAMPLERS NAME ROCKED TO SAMPLERS NAME ROCKED TO SAMPLERS NAME SAMPLERS NAME ROCKED TO SAMPLERS NAME ROCKED TO SAMPLERS NAME TO SAMPLERS NAM	patte	Date/Time:	anv. o.A.	Compan			_	1					10			Company:		Relinquistied
SAMPLERS NAME ROOMS Stands MOBILE# 68 256 9230	0845		THUK	_		and last	2	an	1	Me	1	Rec	t .	Date/Time		Company:		Relinquished
SAMPLERS NAME ROOMS Stard Stard S	3 BF	0.410 A3	9230				m a sec		11/10/20	= Sam	-						x = Samples released to a secured.	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			1015				-								(3			
SAMPLERS SIGNATURE 1/31/19 / OCS		De	1903	-	1/14	1/31		E / TIME	DA						36		SAMPLERS SIGNATU	

Cooler Rec	SDG#:	10661	157
Client: CPIENGSFCH	Temperature:	0,4	-
Cooler Received/Opened On: 02/ \ /19	Temperature.	0,1	
Received By: Brock Fariss	The state of the state of	1	
Signature: AL Fairs	1 1 1		
	NP	Yes	No
Receipt Check List	/		
COC Seal Present / Intact? COC Signed / Accurate?		/	-
Bottles arrive intact?		15	
Correct bottles used?		1	
Sufficient volume sent?			
If Applicable	The state of the s	100	
VOA Zero headspace?	A Part of the last		



lient:CDIENGSFCA Date:02/1	1 Evaluated by:K
----------------------------	------------------

Non-Conformance (check applicable items)

(constructed and and composition of	-	(construction)	
Sample Integrity		Chain of Custody Clarification	
Parameter(s) past holding time	×	Login Clarification Needed	If Broken Container:
Temperature not in range		Chain of custody is incomplete	Insufficient packing material around container
Improper container type		Please specify Metals requested.	Insufficient packing material inside cooler
pH not in range.		Please specify TGLP requested.	Improper handling by carrier (FedEx / UPS / Couri
Insufficient sample volume.		Received additional samples not listed on coc.	Sample was frozen
Sample is biphasic.	W.	Sample ids on containers do not match ids on coc	Container lid not intact
Vials received with headspace,	I A	Trip Blank not received.	If no Chain of Custody:
Broken container		Client did not "X" analysis.	Received by:
Broken container:		Chain of Custody is missing	Date/Time:
Sufficient sample remains			Temp./Cont Rec./pH:
			Carrier:
			Tracking#

Login Comments:TS4-i-190131 received with a time of 0935 on containers but COC states 0930. Currently logged per COC.

Client informed by:	Call	Email X	Voice Mail	Date:02/04/19	Time:1145	
TSR Initials:bjf Cli	lient Conta	act: Bryan Stark	59			

Login Instructions:

Times listed on containers are correct.



February 22, 2019

Vista Work Order No. 1900217

Mr. Scott Bourne CDIM Engineering 45 Polk Street, 3rd Floor San Francisco, CA 94102

Dear Mr. Bourne,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on February 01, 2019 under your Project Name '101-003, Task 1'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 ph: 916-673-1520 fx: 916-673-0106 www.vista-analytical.com

Work Order 1900217 Page 1 of 14

Vista Work Order No. 1900217 Case Narrative

Sample Condition on Receipt:

One water sample was received in good condition and within the method temperature requirements. The sample was received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

EPA Method 1699

The sample was extracted and analyzed for chlorinated pesticides by EPA Method 1699 using a ZB-50 GC column.

Holding Times

The sample was extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected above the sample quantitation limits in the Method Blank. The OPR recoveries were within the method acceptance criteria.

Labeled standard recoveries for all QC and field samples were within method acceptance criteria.

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Analytical Results	5
Qualifiers	9
Certifications	10
Sample Receipt	13

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1900217-01	TS2-E-190131	31-Jan-19 08:35	01-Feb-19 07:50	Amber Glass NM Bottle, 1L
				Amber Glass NM Bottle, 1L
				Amber Glass NM Bottle, 1L

Vista Project: 1900217 Client Project: 101-003, Task 1

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ANALYTICAL RESULTS

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Sample ID: Method Blank EPA Method 1699

Matrix: Aqueous QC Batch: B9B0017 Lab Sample: B9B0017-BLK1

Sample Size: 1.00 L Date Extracted: 04-Feb-2019 8:41 Date Analyzed: 05-Feb-19 16:55 Column: ZB-50

Analyte Co	nc. (pg/L)	DL	EMPC Qualifiers	I	Labeled Standard	%R	LCL-UCL	Qualifiers
Hexachlorobenzene	4.77		J	IS	13C6-Hexachlorobenzene	61.4	5 - 120	
alpha-BHC	ND	3.61		IS	13C6-alpha-BHC	79.8	32 - 130	
Lindane (gamma-BHC)	ND	4.38		IS	13C6-Lindane (gamma-BHC)	86.3	11 - 120	
beta-BHC	ND	4.69		IS	13C6-beta-BHC	83.2	32 - 130	
delta-BHC	ND	3.53		IS	13C6-delta-BHC	86.3	36 - 137	
Heptachlor	ND	3.37		IS	13C10-Heptachlor	83.7	5 - 120	
Aldrin	ND	3.69		IS	13C12-Aldrin	82.2	5 - 120	
Oxychlordane	ND	14.1		IS	13C10-Oxychlordane	94.1	23 - 135	
cis-Heptachlor Epoxide	ND	9.00		IS	13C10-cis-Heptachlor Epoxide	96.0	27 - 137	
trans-Heptachlor Epoxide	ND	23.3		IS	13C10-trans-Chlordane (gamma)	89.2	21 - 132	
trans-Chlordane (gamma)	ND	12.7		IS	13C10-trans-Nonachlor	89.6	14 - 136	
trans-Nonachlor	ND	12.1		IS	13C9-Endosulfan I (alpha)	90.5	15 - 148	
cis-Chlordane (alpha)	ND	12.2		IS	13C12-2,4'-DDE	108	47 - 160	
Endosulfan I (alpha)	ND	16.0		IS	13C12-4,4'-DDE	113	47 - 160	
2,4'-DDE	ND	3.22		IS	13C12-Dieldrin	82.0	40 - 151	
4,4'-DDE	ND	3.60		IS	13C12-Endrin	92.8	35 - 155	
Dieldrin	ND	2.53		IS	13C10-cis-Nonachlor	82.1	36 - 139	
Endrin	ND	3.53		IS	13C9-Endosulfan II (beta)	87.0	5 - 122	
cis-Nonachlor	ND	5.23		IS	13C12-2,4'-DDD	93.5	5 - 199	
Endosulfan II (beta)	ND	7.06		IS	13C12-2,4'-DDT	91.7	5 - 199	
2,4'-DDD	ND	6.02		IS	13C12-4,4'-DDD	90.3	5 - 120	
2,4'-DDT	ND	11.1		IS	13C12-4,4'-DDT	96.2	5 - 120	
4,4'-DDD	ND	6.63		IS	13C9-Endosulfan Sulfate	93.8	15 - 148	
4,4'-DDT	ND	10.5		IS	13C12-Methoxychlor	75.8	5 - 120	
Endosulfan Sulfate	ND	10.6		IS	13C10-Mirex	79.3	5 - 120	
4,4'-Methoxychlor	ND	2.79		IS	13C12-Endrin Aldehyde	54.4	15 - 148	
Mirex	ND	2.85		IS	13C12-Endrin Ketone	72.8	15 - 148	
Endrin Aldehyde	ND	5.09						
Endrin Ketone	ND	7.35						

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

Work Order 1900217 Page 6 of 14



Sample ID: OPR EPA Method 1699

Matrix: Aqueous QC Batch: B9B0017 Lab Sample: B9B0017-BS1

Sample Size: 1.00 L Date Extracted: 04-Feb-2019 8:41 Date Analyzed: 05-Feb-19 14:27 Column: ZB-50

Analyte	Amt Found (pg/L)	Spike Amt	%R	Limits		Labeled Standard	%R	LCL-UCL
Hexachlorobenzene	976	1000	97.6	50 - 120	IS	13C6-Hexachlorobenzene	62.0	5 - 120
alpha-BHC	984	1000	98.4	50 - 120	IS	13C6-alpha-BHC	78.3	17 - 141
Lindane (gamma-BHC)	964	1000	96.4	50 - 120	IS	13C6-Lindane (gamma-BHC)	86.3	5 - 124
beta-BHC	996	1000	99.6	50 - 120	IS	13C6-beta-BHC	83.8	17 - 141
delta-BHC	1000	1000	100	50 - 120	IS	13C6-delta-BHC	86.3	16 - 150
Heptachlor	1020	1000	102	50 - 120	IS	13C10-Heptachlor	81.5	5 - 128
Aldrin	963	1000	96.3	50 - 120	IS	13C12-Aldrin	82.1	5 - 126
Oxychlordane	988	1000	98.8	50 - 120	IS	13C10-Oxychlordane	99.7	5 - 144
cis-Heptachlor Epoxide	1020	1000	102	50 - 120	IS	13C10-cis-Heptachlor Epoxide	98.5	8 - 146
trans-Heptachlor Epoxide	1050	1000	105	50 - 120	IS	13C10-trans-Chlordane (gamma)	95.0	15 - 144
trans-Chlordane (gamma)	1010	1000	101	50 - 120	IS	13C10-trans-Nonachlor	93.7	13 - 149
trans-Nonachlor	954	1000	95.4	50 - 120	IS	13C9-Endosulfan I (alpha)	106	5 - 144
cis-Chlordane (alpha)	1060	1000	106	50 - 120	IS	13C12-2,4'-DDE	99.8	26 - 169
Endosulfan I (alpha)	946	1000	94.6	50 - 120	IS	13C12-4,4'-DDE	103	26 - 169
2,4'-DDE	975	1000	97.5	24 - 123	IS	13C12-Dieldrin	87.7	19 - 161
4,4'-DDE	995	1000	99.5	50 - 120	IS	13C12-Endrin	90.7	20 - 157
Dieldrin	1020	1000	102	50 - 120	IS	13C10-cis-Nonachlor	86.3	17 - 154
Endrin	1060	1000	106	50 - 120	IS	13C9-Endosulfan II (beta)	78.4	5 - 120
cis-Nonachlor	1070	1000	107	50 - 120	IS	13C12-2,4'-DDD	89.3	14 - 200
Endosulfan II (beta)	959	1000	95.9	5 - 200	IS	13C12-2,4'-DDT	85.2	14 - 200
2,4'-DDD	929	1000	92.9	50 - 120	IS	13C12-4,4'-DDD	87.2	14 - 200
2,4'-DDT	1010	1000	101	50 - 120	IS	13C12-4,4'-DDT	93.6	13 - 200
4,4'-DDD	975	1000	97.5	42 - 120	IS	13C9-Endosulfan Sulfate	94.8	5 - 144
4,4'-DDT	924	1000	92.4	50 - 120	IS	13C12-Methoxychlor	77.8	8 - 200
Endosulfan Sulfate	947	1000	94.7	50 - 120	IS	13C10-Mirex	82.9	5 - 138
4,4'-Methoxychlor	952	1000	95.2	50 - 120	IS	13C12-Endrin Aldehyde	53.6	5 - 144
Mirex	993	1000	99.3	50 - 120	IS	13C12-Endrin Ketone	71.7	5 - 144
Endrin Aldehyde	1040	1000	104	50 - 134				
Endrin Ketone	933	1000	93.3	50 - 134				

LCL-UCL - Lower control limit - upper control limit

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Sample ID: TS2-	E-190131							EPA Met	hod 1699
Client Data		Sample Data		Labo	ratory	Data			
Name: CDIM	1 Engineering	Matrix:	Water	Lab	Samp	le: 1900217-01	Date Received:	01-Feb-2019	7:50
Project: 101-0	03, Task 1	Sample Size:	1.01 L	QC	Batch:	B9B0017	Date Extracted:	04-Feb-2019	8:41
Date Collected: 31-Jan	n-2019 8:35			Dat	e Analy	yzed: 05-Feb-19 19:23 Column	: ZB-50		
Analyte Conc.	. (pg/L) D	L EMPC	Qua	lifiers		Labeled Standard	%R	LCL-UCL	Qualifiers
Hexachlorobenzene	25.1		J,	В	IS	13C6-Hexachlorobenzene	69.1	5 - 120	
alpha-BHC	19.7			J	IS	13C6-alpha-BHC	77.9	32 - 130	
Lindane (gamma-BHC)	11.9			J	IS	13C6-Lindane (gamma-BHC)	83.1	11 - 120	
beta-BHC	49.2				IS	13C6-beta-BHC	84.7	32 - 130	
delta-BHC	ND 3.3				IS	13C6-delta-BHC	87.7	36 - 137	
Heptachlor	ND 9.3				IS	13C10-Heptachlor	82.5	5 - 120	
Aldrin	ND 7.8				IS	13C12-Aldrin	77.4	5 - 120	
Oxychlordane	ND 26	.2			IS	13C10-Oxychlordane	93.6	23 - 135	
cis-Heptachlor Epoxide	102				IS	13C10-cis-Heptachlor Epoxide	95.4	27 - 137	
trans-Heptachlor Epoxide	1920				IS	13C10-trans-Chlordane (gamma	·	21 - 132	
trans-Chlordane (gamma)	82.4				IS	13C10-trans-Nonachlor	93.9	14 - 136	
trans-Nonachlor	ND	27.3			IS	13C9-Endosulfan I (alpha)	97.7	15 - 148	
cis-Chlordane (alpha)	148				IS	13C12-2,4'-DDE	107	47 - 160	
Endosulfan I (alpha)	ND 27	.9			IS	13C12-4,4'-DDE	111	47 - 160	
2,4'-DDE	7.56			J	IS	13C12-Dieldrin	80.0	40 - 151	
4,4'-DDE	142				IS	13C12-Endrin	92.4	35 - 155	
Dieldrin	1060				IS	13C10-cis-Nonachlor	81.4	36 - 139	
Endrin	279				IS	13C9-Endosulfan II (beta)	79.3	5 - 122	
cis-Nonachlor	ND 13	.0			IS	13C12-2,4'-DDD	95.8	5 - 199	
Endosulfan II (beta)	ND 18	.3			IS	13C12-2,4'-DDT	93.6	5 - 199	
2,4'-DDD	83.1				IS	13C12-4,4'-DDD	93.4	5 - 120	
2,4'-DDT	61.8				IS	13C12-4,4'-DDT	98.3	5 - 120	
4,4'-DDD	112				IS	13C9-Endosulfan Sulfate	88.3	15 - 148	
4,4'-DDT	182				IS	13C12-Methoxychlor	76.4	5 - 120	
Endosulfan Sulfate	ND 31	.2			IS	13C10-Mirex	77.8	5 - 120	
4,4'-Methoxychlor	ND 5.1	17			IS	13C12-Endrin Aldehyde	49.8	15 - 148	
Mirex	ND 6.8	36			IS	13C12-Endrin Ketone	67.8	15 - 148	
Endrin Aldehyde	ND 14	.4							
Endrin Ketone	629								
DI Comple anguife estimated						T 2 111 22 2 111 22			

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

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DATA QUALIFIERS & ABBREVIATIONS

B This compound was also detected in the method blank

Conc. Concentration

D Dilution

DL Detection limit

E The associated compound concentration exceeded the calibration range of the

instrument

H Recovery and/or RPD was outside laboratory acceptance limits

I Chemical Interference

J The amount detected is below the Reporting Limit/LOQ

LOD Limits of Detection

LOQ Limits of Quantitation

M Estimated Maximum Possible Concentration (CA Region 2 projects only)

NA Not applicable

ND Not Detected

P The reported concentration may include contribution from chlorinated diphenyl

ether(s).

Q Ion ratio outside of 70-130% of Standard Ratio.

TEQ Toxic Equivalency

U Not Detected (specific projects only)

* See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

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Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	19-013-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1521520
New Hampshire Environmental Accreditation Program	207718
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-010
Pennsylvania Department of Environmental Protection	015
Texas Commission on Environmental Quality	T104704189-19-10
Virginia Department of General Services	9618
Washington Department of Ecology	C584-18
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

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NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA 23
Dibenzofurans	
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA TO-9A
Dibenzofurans	

MATRIX: Biological Tissue	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B
Dilution GC/HRMS	
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue	EPA 1668A/C
by GC/HRMS	
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by	EPA 1699
HRGC/HRMS	
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by	EPA 8280A/B
GC/HRMS	
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A

MATRIX: Drinking Water						
Description of Test	Method					
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA					
	1613/1613B					
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522					
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537					
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009					

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B
Dilution GC/HRMS	
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue	EPA 1668A/C
by GC/HRMS	
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated	EPA 8280A/B
Dibenzofurans by GC/HRMS	
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated	EPA 8280A/B
Dibenzofurans by GC/HRMS	
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A

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4	
64	

CHAIN OF CUSTODY RECORD

1900217

1.0°C

LABORATO	PRY:	INSTRUCTIONS FOR	LAB PERSO	NNEL:	_		Analysis '	Turnard	oud Time	X Sta	andard	□ Other		100	-		1.0
Vista Analytical Please send analytic results, electronic deliverables and the original chain-of-custody form to: bas@cdimengineering.com, mec@cdimengineering.com sab@cdimengineering.com							GeoTracker EDF required?										other scans.
CDIM CON		Project Manager:	Bryan Starks	3		1	- topoit o	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	10 10.		ALYSIS RE					COC N	umber:
CDIM Engin	eering	Phone Number	Phone Number 415-498-0535					1					1-1-	-17			
45 Polk Stre	et, 3rd Floor	Sampled by:							1111				1 1				
San Francis	co, California 94102	Sample date(s):							1							Page_\	of \
PROJECTI	NFORMATION					1							1.4				
Job Name:	LRTC 2018-2019 Industrial Stormwater					1699)										SDG n	umber:
Job#: Address:	101-003, Task 1 402 Wright Avenue, Richmond CA 94804					des (EPA 1699)											
Lab ID	Sample Identification	Sample Date	Sample Time	Sample Matrix	# of Cont.	Pesticides										Sample Sp	ecific Notes:
	TS2-E-19013()	1/34/2019	835	W	3	X										Composite	
																1111	
												-11			-1		
														1		11	
							100	TV.			4=1	- 1		42			
				/		-		+				-		1			
						-				-		-		+ +			
			_	Field Filt	arad (V)			-	+ 1		+	-	-	+++			
Drae	ervation Used: 1= Ice, 2= HCI; 3= H ₂ SO ₄	4-UNO : 5-NaOU: 5- Othe		rieiu riit	ered (X):			-			-	-	-	+			
	structions/QC Requirements & Co			with rapart	ing limit	1 and n	nothod o	lotoct	ion lim	it Anal	vac and s	2224	nhi tha r	natala lie	tod ob suc		
	and the second s	<u> </u>	na report	man report	ang mine	unu n	iletilou (161601		it. Aliai	yze and i	ероп о	my the i	netals lis	steu above		
Relinquished I	The state of the s	Company:	4	Date/Time:	1/31/19	Rece	ived by:	Th	vic			0	Company	ÁV		Date/Time:	0750
Relinquished I	by:	Company:		Date/Time:		Rece	ived by:					0	Company	<i>/</i> :		Date/Time:	
Relinquished I	yy:	Company:		Date/Time:		Rece	ived by:					0	Company	<i>r</i> :		Date/Time:	
	x = Samples released to a secured,	ocked area.				1	0 =	Sampl	es receiv	ed from a	a secured, lo		a				
	SAMPLERS NAME	Brown Has	ks						MOBIL	E#	8	20	256	92	30		1
	SAMPLERS SIGNATUR	they fe							DATE /	TIME	100	1/19		1015			1



Sample Log-In Checklist

7,112,71121,231	3.3.7							
Vista Work Orde	r#:	901	021	7	Page #		of	
Samples Arrival:	Date/Time	0150	Initials:		Location: W2-Z Shelf/Rack: NA			
Logged In:	Date/Time	822	Initials:		Location: Shelf/Rack		2	
Delivered By:	FedEx UPS	On Tra	ic GSO	DHL	Hand Deliver	1	Other	
Preservation:	Ice	Blu	ue Ice		Dry Ice	Non		ne
Temp °C: . Temp °C: , ((uncorrected) (corrected)	Probe use	ed: Y / N		Thermome	ter ID:	TRY	
		The same				YES	NO	NA
a visitation of the contract	e Volume Receive	d?						
Holding Time Ac	ceptable?					1		
Shipping Container(s) Intact?								
Shipping Custod	y Seals Intact?							-1
Shipping Docum	entation Present?					1		
Airbill F.C	Trk# 78	52 50	50 535	57		1		
Sample Containe	er Intact?					1		

COC Anomaly/Sample Acce	ptance Form co	mpieted?				
If Chlorinated or Drinking Wa	ater Samples, Ad	cceptable F	reservation?			1
Preservation Documented:	Na₂S₂O₃ Other	Trizma	None)	Yes	No	NA
Shipping Container	Vista	Clien	Retain	Return	Dis	pose

Comments:

ID.: LR - SLC

Sample Custody Seals Intact?

Chain of Custody / Sample Documentation Present?

Rev No.: 3

Rev Date: 05 October 2018

Page: 1 of 1



February 22, 2019

Vista Work Order No. 1900218

Mr. Scott Bourne CDIM Engineering 45 Polk Street, 3rd Floor San Francisco, CA 94102

Dear Mr. Bourne,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on February 01, 2019 under your Project Name '101-003, Task 1'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 ph: 916-673-1520 fx: 916-673-0106 www.vista-analytical.com

Work Order 1900218 Page 1 of 14

Vista Work Order No. 1900218 Case Narrative

Sample Condition on Receipt:

One water sample was received in good condition and within the method temperature requirements. The sample was received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

EPA Method 1699

The sample was extracted and analyzed for chlorinated pesticides by EPA Method 1699 using a ZB-50 GC column.

Holding Times

The sample was extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected above the sample quantitation limits in the Method Blank. The OPR recoveries were within the method acceptance criteria.

The labeled standard recoveries outside the method acceptance criteria are listed in the table below:

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
1900218-01	TS2-I-190131	EPA Method 1699	13C10-cis-Nonachlor	Н	27.9
1900218-01	TS2-I-190131	EPA Method 1699	13C12-Endrin Ketone	Н	14.0

H = Recovery was outside laboratory acceptance criteria.

Work Order 1900218 Page 2 of 14

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Case Narrative	1
Table of Contents	3
Sample Inventory	4
Analytical Results	5
Qualifiers	9
Certifications	10
Sample Receipt	13

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1900218-01	TS2-I-190131	31-Jan-19 08:25	01-Feb-19 07:50	Amber Glass NM Bottle, 1L
				Amber Glass NM Bottle, 1L
				Amber Glass NM Bottle. 1L

Vista Project: 1900218 Client Project: 101-003, Task 1

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ANALYTICAL RESULTS

Work Order 1900218 Page 5 of 14

Sample ID: Method Blank EPA Method 1699

Matrix: Aqueous QC Batch: B9B0017 Lab Sample: B9B0017-BLK1

Sample Size: 1.00 L Date Extracted: 04-Feb-2019 8:41 Date Analyzed: 05-Feb-19 16:55 Column: ZB-50

Analyte C	onc. (pg/L)	DL EMI	PC Qualifiers	I	Labeled Standard	%R	LCL-UCL	Qualifiers
Hexachlorobenzene	4.77		J	IS	13C6-Hexachlorobenzene	61.4	5 - 120	
alpha-BHC	ND	3.61		IS	13C6-alpha-BHC	79.8	32 - 130	
Lindane (gamma-BHC)	ND	4.38		IS	13C6-Lindane (gamma-BHC)	86.3	11 - 120	
beta-BHC	ND	4.69		IS	13C6-beta-BHC	83.2	32 - 130	
delta-BHC	ND	3.53		IS	13C6-delta-BHC	86.3	36 - 137	
Heptachlor	ND	3.37		IS	13C10-Heptachlor	83.7	5 - 120	
Aldrin	ND	3.69		IS	13C12-Aldrin	82.2	5 - 120	
Oxychlordane	ND	14.1		IS	13C10-Oxychlordane	94.1	23 - 135	
cis-Heptachlor Epoxide	ND	9.00		IS	13C10-cis-Heptachlor Epoxide	96.0	27 - 137	
trans-Heptachlor Epoxid	e ND	23.3		IS	13C10-trans-Chlordane (gamma)	89.2	21 - 132	
trans-Chlordane (gamma) ND	12.7		IS	13C10-trans-Nonachlor	89.6	14 - 136	
trans-Nonachlor	ND	12.1		IS	13C9-Endosulfan I (alpha)	90.5	15 - 148	
cis-Chlordane (alpha)	ND	12.2		IS	13C12-2,4'-DDE	108	47 - 160	
Endosulfan I (alpha)	ND	16.0		IS	13C12-4,4'-DDE	113	47 - 160	
2,4'-DDE	ND	3.22		IS	13C12-Dieldrin	82.0	40 - 151	
4,4'-DDE	ND	3.60		IS	13C12-Endrin	92.8	35 - 155	
Dieldrin	ND	2.53		IS	13C10-cis-Nonachlor	82.1	36 - 139	
Endrin	ND	3.53		IS	13C9-Endosulfan II (beta)	87.0	5 - 122	
cis-Nonachlor	ND	5.23		IS	13C12-2,4'-DDD	93.5	5 - 199	
Endosulfan II (beta)	ND	7.06		IS	13C12-2,4'-DDT	91.7	5 - 199	
2,4'-DDD	ND	6.02		IS	13C12-4,4'-DDD	90.3	5 - 120	
2,4'-DDT	ND	11.1		IS	13C12-4,4'-DDT	96.2	5 - 120	
4,4'-DDD	ND	6.63		IS	13C9-Endosulfan Sulfate	93.8	15 - 148	
4,4'-DDT	ND	10.5		IS	13C12-Methoxychlor	75.8	5 - 120	
Endosulfan Sulfate	ND	10.6		IS	13C10-Mirex	79.3	5 - 120	
4,4'-Methoxychlor	ND	2.79		IS	13C12-Endrin Aldehyde	54.4	15 - 148	
Mirex	ND	2.85		IS	13C12-Endrin Ketone	72.8	15 - 148	
Endrin Aldehyde	ND	5.09						
Endrin Ketone	ND	7.35						

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

Work Order 1900218 Page 6 of 14



Sample ID: OPR EPA Method 1699

Matrix: Aqueous QC Batch: B9B0017 Lab Sample: B9B0017-BS1

Sample Size: 1.00 L Date Extracted: 04-Feb-2019 8:41 Date Analyzed: 05-Feb-19 14:27 Column: ZB-50

Analyte	Amt Found (pg/L)	Spike Amt	%R	Limits		Labeled Standard	%R	LCL-UCL
Hexachlorobenzene	976	1000	97.6	50 - 120	IS	13C6-Hexachlorobenzene	62.0	5 - 120
alpha-BHC	984	1000	98.4	50 - 120	IS	13C6-alpha-BHC	78.3	17 - 141
Lindane (gamma-BHC)	964	1000	96.4	50 - 120	IS	13C6-Lindane (gamma-BHC)	86.3	5 - 124
beta-BHC	996	1000	99.6	50 - 120	IS	13C6-beta-BHC	83.8	17 - 141
delta-BHC	1000	1000	100	50 - 120	IS	13C6-delta-BHC	86.3	16 - 150
Heptachlor	1020	1000	102	50 - 120	IS	13C10-Heptachlor	81.5	5 - 128
Aldrin	963	1000	96.3	50 - 120	IS	13C12-Aldrin	82.1	5 - 126
Oxychlordane	988	1000	98.8	50 - 120	IS	13C10-Oxychlordane	99.7	5 - 144
cis-Heptachlor Epoxide	1020	1000	102	50 - 120	IS	13C10-cis-Heptachlor Epoxide	98.5	8 - 146
trans-Heptachlor Epoxide	1050	1000	105	50 - 120	IS	13C10-trans-Chlordane (gamma)	95.0	15 - 144
trans-Chlordane (gamma)	1010	1000	101	50 - 120	IS	13C10-trans-Nonachlor	93.7	13 - 149
trans-Nonachlor	954	1000	95.4	50 - 120	IS	13C9-Endosulfan I (alpha)	106	5 - 144
cis-Chlordane (alpha)	1060	1000	106	50 - 120	IS	13C12-2,4'-DDE	99.8	26 - 169
Endosulfan I (alpha)	946	1000	94.6	50 - 120	IS	13C12-4,4'-DDE	103	26 - 169
2,4'-DDE	975	1000	97.5	24 - 123	IS	13C12-Dieldrin	87.7	19 - 161
4,4'-DDE	995	1000	99.5	50 - 120	IS	13C12-Endrin	90.7	20 - 157
Dieldrin	1020	1000	102	50 - 120	IS	13C10-cis-Nonachlor	86.3	17 - 154
Endrin	1060	1000	106	50 - 120	IS	13C9-Endosulfan II (beta)	78.4	5 - 120
cis-Nonachlor	1070	1000	107	50 - 120	IS	13C12-2,4'-DDD	89.3	14 - 200
Endosulfan II (beta)	959	1000	95.9	5 - 200	IS	13C12-2,4'-DDT	85.2	14 - 200
2,4'-DDD	929	1000	92.9	50 - 120	IS	13C12-4,4'-DDD	87.2	14 - 200
2,4'-DDT	1010	1000	101	50 - 120	IS	13C12-4,4'-DDT	93.6	13 - 200
4,4'-DDD	975	1000	97.5	42 - 120	IS	13C9-Endosulfan Sulfate	94.8	5 - 144
4,4'-DDT	924	1000	92.4	50 - 120	IS	13C12-Methoxychlor	77.8	8 - 200
Endosulfan Sulfate	947	1000	94.7	50 - 120	IS	13C10-Mirex	82.9	5 - 138
4,4'-Methoxychlor	952	1000	95.2	50 - 120	IS	13C12-Endrin Aldehyde	53.6	5 - 144
Mirex	993	1000	99.3	50 - 120	IS	13C12-Endrin Ketone	71.7	5 - 144
Endrin Aldehyde	1040	1000	104	50 - 134				
Endrin Ketone	933	1000	93.3	50 - 134				

LCL-UCL - Lower control limit - upper control limit

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Sample ID: TS2-	I-190131						EPA Met	hod 1699
Project: 101-0	1 Engineering 03, Task 1 n-2019 8:25	Sample Data Matrix: Water Sample Size: 1.01 L	L	aboratory Lab Samp QC Batch Date Anal	le: 1900218-01 : B9B0017	Date Received: Date Extracted: : ZB-50	01-Feb-201 04-Feb-201	
Analyte Conc.	(pg/L) DL	EMPC	Qualifier	·s	Labeled Standard	%R	LCL-UCL	Qualifiers
Hexachlorobenzene	1030		В	IS	13C6-Hexachlorobenzene	83.6	5 - 120	
alpha-BHC	51.2			IS	13C6-alpha-BHC	85.3	32 - 130	
Lindane (gamma-BHC)	56.8			IS	13C6-Lindane (gamma-BHC)	86.9	11 - 120	
beta-BHC	48.6			IS	13C6-beta-BHC	71.6	32 - 130	
delta-BHC	ND 6.64			IS	13C6-delta-BHC	75.2	36 - 137	
Heptachlor	16.8		J	IS	13C10-Heptachlor	88.1	5 - 120	
Aldrin	18.2		J	IS	13C12-Aldrin	64.6	5 - 120	
Oxychlordane	ND 26.3	}		IS	13C10-Oxychlordane	70.9	23 - 135	
cis-Heptachlor Epoxide	144			IS	13C10-cis-Heptachlor Epoxide	64.8	27 - 137	
trans-Heptachlor Epoxide	918			IS	13C10-trans-Chlordane (gamma) 47.5	21 - 132	
trans-Chlordane (gamma)	608			IS	13C10-trans-Nonachlor	53.0	14 - 136	
trans-Nonachlor	319			IS	13C9-Endosulfan I (alpha)	58.8	15 - 148	
cis-Chlordane (alpha)	931			IS	13C12-2,4'-DDE	65.6	47 - 160	
Endosulfan I (alpha)	ND 41.2	2		IS	13C12-4,4'-DDE	52.0	47 - 160	
2,4'-DDE	269			IS	13C12-Dieldrin	45.6	40 - 151	
4,4'-DDE	3830			IS	13C12-Endrin	44.4	35 - 155	
Dieldrin	1820			IS	13C10-cis-Nonachlor	27.9	36 - 139	Н
Endrin	411			IS	13C9-Endosulfan II (beta)	29.2	5 - 122	
cis-Nonachlor	101			IS	13C12-2,4'-DDD	48.9	5 - 199	
Endosulfan II (beta)	ND 108			IS	13C12-2,4'-DDT	36.1	5 - 199	
2,4'-DDD	1250			IS	13C12-4,4'-DDD	28.9	5 - 120	
2,4'-DDT	1700			IS	13C12-4,4'-DDT	26.4	5 - 120	
4,4'-DDD	2360			IS	13C9-Endosulfan Sulfate	17.5	15 - 148	
4,4'-DDT	4580			IS	13C12-Methoxychlor	15.1	5 - 120	
Endosulfan Sulfate	ND 248			IS	13C10-Mirex	20.9	5 - 120	
4,4'-Methoxychlor	ND 3050)		IS	13C12-Endrin Aldehyde	18.4	15 - 148	
Mirex	ND 58.5	5		IS	13C12-Endrin Ketone	14.0	15 - 148	Н
Endrin Aldehyde	ND 110							
Endrin Ketone	ND 320							
DI - Sample specife estimated					Lawar control limit unner control limit			

DL - Sample specifc estimated detection limit

EMPC - Estimated maximum possible concentration

LCL-UCL - Lower control limit - upper control limit

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DATA QUALIFIERS & ABBREVIATIONS

B This compound was also detected in the method blank

Conc. Concentration

D Dilution

DL Detection limit

E The associated compound concentration exceeded the calibration range of the

instrument

H Recovery and/or RPD was outside laboratory acceptance limits

I Chemical Interference

J The amount detected is below the Reporting Limit/LOQ

LOD Limits of Detection

LOQ Limits of Quantitation

M Estimated Maximum Possible Concentration (CA Region 2 projects only)

NA Not applicable

ND Not Detected

P The reported concentration may include contribution from chlorinated diphenyl

ether(s).

Q Ion ratio outside of 70-130% of Standard Ratio.

TEQ Toxic Equivalency

U Not Detected (specific projects only)

* See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

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Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	19-013-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1521520
New Hampshire Environmental Accreditation Program	207718
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-010
Pennsylvania Department of Environmental Protection	015
Texas Commission on Environmental Quality	T104704189-19-10
Virginia Department of General Services	9618
Washington Department of Ecology	C584-18
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

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NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA 23
Dibenzofurans	
Determination of Polychlorinated p-Dioxins & Polychlorinated	EPA TO-9A
Dibenzofurans	

MATRIX: Biological Tissue	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B
Dilution GC/HRMS	
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue	EPA 1668A/C
by GC/HRMS	
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by	EPA 1699
HRGC/HRMS	
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by	EPA 8280A/B
GC/HRMS	
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A

MATRIX: Drinking Water	
Description of Test	Method
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA
	1613/1613B
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B
Dilution GC/HRMS	
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue	EPA 1668A/C
by GC/HRMS	
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated	EPA 8280A/B
Dibenzofurans by GC/HRMS	
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated	EPA
Dibenzofurans (PCDFs) by GC/HRMS	8290/8290A

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CHAIN OF CUSTODY RECORD

190021	8
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1.0°C

LABORATO	DRY:	INSTRUCTIONS FOR	LAB PERSO	NNEL:		_	Analy	sis Turi	aroud T	me	X Stand	dard	n Other	-					1.0
Vista Analyt 1104 Windf (916) 673-1 Karen Volpe	eld Way, El Dorado Hills CA 95762 520	Please send analytic re the original chain-of-cu bas@cdimengineering.co sab@cdimengineering.co	ustody form to m, mec@cdim);			LOCU Repor	JS EDD rt Resu	DF required sto:	?	ΧI	es X X No VIDL ht (total)		/ weight	No	tify us of a	any anoma	nethod and detection la alous peaks in GC or c any questions or proble	ther scans.
CDIM CON		Project Manager:	Bryan Starks			1	перо	10 3011 10	ouns to.	U W		YSIS R						COC N	ımher:
CDIM Engir	eering	Phone Number	415-498-053				T			1	T	1		T				- 000 111	amber.
10 m 10 m 10 m 10 m 10 m 10 m 10 m 10 m	et, 3rd Floor	Sampled by:	7.57,120,027											0					
	co, California 94102	Sample date(s):				1			50.				1	1 1				Page	1
	NFORMATION	Sample date(s).																Page_1_	of
Job Name:	LRTC 2018-2019 Industrial Stormwater					(669)								1 1				SDG n	umber:
Job#:	101-003, Task 1					EPA 1								1		111			
Address:	402 Wright Avenue, Richmond CA 94804					des (11/			
Lab ID	Sample Identification	Sample Date	Sample Time	Sample Matrix	# of Cont.	Pesticides (EPA 1699)										Ш		Sample Spe	cific Notes:
	TS2-I-190130	1/34/2019	825	W	3	X												Composite	
			1111																
5																			
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				Field Filt	ered (X):								1						
Pres	ervation Used: 1= Ice, 2= HCI; 3= H ₂ SO ₄ ;	4=HNO ₃ ; 5=NaOH; 6= Othe	r			1													
Special Ins	structions/QC Requirements & Co	mments: Level II Repo	ort. Report v	with repor	ting limit	and	metho	od det	ection	limit.	Analy:	ze and	report	only the	metals	slisted	above.		
Relinquished	DY:	Company:		Date/Time: 1/51/19	ocs/	Rece	ived by		Zhi	,			0	Compa	VA			Date/Time:	0750
Relinquished		Company:		Date/Time:	1000	Rece	ived by	:	<u> </u>		-		0	Compar	V			Date/Time:	0.00
Relinquished	ру:	Company:		Date/Time:		Rece	ived by	:					0	Compar	ny:			Date/Time:	
	x = Samples released to a secured, I	ocked area						• = Sa	nples re	ceived f	rom a s	ecured, lo		а					
	SAMPLERS NAME	Bryan Starl	3							BILE#				56 9	73				4
	SAMPLERS SIGNATUR	Bryan Stant	_						DA	E/TIM	E	1	3///		1015				1



Sample Log-In Checklist

Vista Work Orde	er#:	(700)2	8	Page #	of		
Samples Arrival:				Initials:		Shelf/Rack: NA Location: WR-2 Shelf/Rack: B2			
Logged In: Date/Time			827	Initials:					
Delivered By:	FedEx	UPS	On Trac	GSO	DHL	Hand	Other		
Preservation:	vation: (Ice)			e Ice		Dry Ice None			
Temp °C: \.\ (uncorrected) Temp °C: \ (corrected)			Probe use	d: Y / 🕦)	Thermometer ID: JR4			

					YES	NO	NA
Adequate Sample Volume Received?							
Holding Time Acceptable?				1			
Shipping Container(s) Intact?				1			
Shipping Custody Seals Intact?					1		
Shipping Documentation Present?			1				
Airbill F.O. Trk#	7852 5	050 6357	L		1		
Sample Container Intact?				1			
Sample Custody Seals Intact?						1	
Chain of Custody / Sample Documentation Present?			/				
COC Anomaly/Sample Acceptance Form completed?					/	1	
If Chlorinated or Drinking Wa	ter Samples, Ad	cceptable Prese	ervation?				1
Preservation Documented:	Na ₂ S ₂ O ₃ Other	7	None		Yes	No	NA.
Shipping Container	Vista	Client	Retain	Re	turn	Disp	ose

Comments:

ID.: LR - SLC

Rev No.: 3

Rev Date: 05 October 2018

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APPENDIX C

Upland Capping System Inspection Form

Former United Heckathorn Superfund Site Upland Capping System Inspection Form Levin Richmond Terminal, 402 Wright Avenue, Richmond, California I. General Information Bryan Starks and Scott Bourne, PE Site: Former United Heckathorn Superfund Site, Inspector: Levin Richmond Terminal Organization: **CDIM** Date and time of inspection: Address: 402 Wright Avenue, Richmond, CA 5/29/19 1:00pm II. Upland Area Concrete Cap, Gravel Cover, and Drainage System Observations Note significant cracks, holes, penetrations, damage, settlement, or any exposure of underlying soil in any component of the capping system. North Main Terminal (SW-3) No N/A Comments Are concrete cap surfaces in adequate condition to promote effectiveness of the cap? Are gravel cover surfaces in adequate condition to promote effectiveness of the cap? Is storm water drainage infrastructure (interceptors, drain inlets) in adequate condition to prevent exposure of underlying soil to runoff? Is accumulated sediment observed in the interceptors or drain inlets? Interceptors not accessed during If yes, note location and photograph. this inspection. Drain inlets have inlet protection. X Are corrective actions required? Attach a photograph of areas requiring corrective action. Describe any recent repairs/maintenance: All interceptors in the Upland area were cleaned prior to the 2018-2019 wet season. This is performed annually during dry weather and as-needed throughout the storm season. Drain inlets equipped with drain inlet filters, which are observed during regular BMP inspections. Drain inlets are replaced as needed throughout the storm season and at least once per year prior to the start of the storm season. Deteriorated concrete west of Interceptor 3 was repaired and a new storm drain was installed to reduce ponding in the area. New curbing was added along the west border of the site to preven water from running off site. Describe conditions and locations of the capping system which require attention: Small cracks noted in the bulk product storage area. No soil was exposed in the area, but the area should continue to be monitored. Describe corrective actions required and their date(s) of implementation: None.

Date: 5/29/2019 1 of 5

Former United Heckathorn Superfund Site Upland Capping System Inspection Form Levin Richmond Terminal, 402 Wright Avenue, Richmond, California North Main Terminal/United Heckathorn (SW-4) Yes No N/A Comments Are concrete cap surfaces in adequate condition to promote effectiveness of the cap? Are gravel cover surfaces in adequate condition to promote effectiveness of the cap? X Is storm water drainage infrastructure (interceptors, drain inlets) in adequate condition to prevent exposure of underlying soil to runoff? Is accumulated sediment observed in the interceptors or drain inlets? Interceptors not accessed during If yes, note location and photograph. this inspection. Drain inlets have inlet protection. Х Are corrective actions required? Attach a photograph of areas requiring corrective action. Describe any recent repairs/maintenance: None Describe conditions and locations of the capping system which require attention: Minor surficial cracking was noted in the bulk product storage area. Continue to monitor. Describe corrective actions required and their date(s) of implementation: None.

Signature: Date: 5/29/2019 2 of 5

Former United Heckathorn Superfund Site Upland Capping System Inspection Form Levin Richmond Terminal, 402 Wright Avenue, Richmond, California North Main Terminal/United Heckathorn (SW-5) Yes No N/A Comments Are concrete cap surfaces in adequate condition to promote effectiveness of the cap? Are gravel cover surfaces in adequate condition to promote effectiveness of the cap? X Is storm water drainage infrastructure (interceptors, drain inlets) in adequate condition to prevent exposure of underlying soil to runoff? Is accumulated sediment observed in the interceptors or drain inlets? Interceptors not accessed during If yes, note location and photograph. this inspection. Drain inlets have inlet protection. Х Are corrective actions required? Attach a photograph of areas requiring corrective action. Describe any recent repairs/maintenance: Repair performed for cracking at railroad crossing. Describe conditions and locations of the capping system which require attention: None. Gravel cover should continue to be monitored, and additional gravel placed as Describe corrective actions required and their date(s) of implementation: None.

Date: 5/29/2019 3 of 5

Former United Heckathorn Superfund Site Upland Capping System Inspection Form Levin Richmond Terminal, 402 Wright Avenue, Richmond, California North Main Terminal/United Heckathorn (SW-6) Yes No N/A Comments Are concrete cap surfaces in adequate condition to promote effectiveness of the cap? Are gravel cover surfaces in adequate condition to promote effectiveness of the cap? X Is storm water drainage infrastructure (interceptors, drain inlets) in adequate condition to prevent exposure of underlying soil to runoff? Is accumulated sediment observed in the interceptors or drain inlets? Interceptors not accessed during If yes, note location and photograph. this inspection. Drain inlets have inlet protection. X Are corrective actions required? Attach a photograph of areas requiring corrective action. Describe any recent repairs/maintenance: None. Describe conditions and locations of the capping system which require attention: Minor surficial cracks and seams were noted north of interceptor #5 and treatment system TS-2. Gravel cover should continue to be monitored, and additional gravel placed as needed. Describe corrective actions required and their date(s) of implementation: None.

Signature: Date: 5/29/2019 4 of 5

Former United Heckathorn Superfund Site Upland Capping System Inspection Form Levin Richmond Terminal, 402 Wright Avenue, Richmond, California North Main Terminal/United Heckathorn (SW-7) Yes No N/A Comments Are concrete cap surfaces in adequate condition to promote effectiveness of the cap? Are gravel cover surfaces in adequate condition to promote effectiveness of the cap? X Is storm water drainage infrastructure (interceptors, drain inlets) in adequate condition to prevent exposure of underlying soil to runoff? Is accumulated sediment observed in the interceptors or drain inlets? Interceptors not accessed during If yes, note location and photograph. this inspection. Drain inlets have inlet protection. Х Are corrective actions required? Attach a photograph of areas requiring corrective action. Describe any recent repairs/maintenance: None. Describe conditions and locations of the capping system which require attention: Minor surfical cracks and seams observed throughout SW-7. Gravel cover should continue to be monitored, and additional gravel placed as needed. Describe corrective actions required and their date(s) of implementation: None.

Signature: Date: 5/29/2019 5 of 5